JOURNAL
OF THE
Association *of* American Medical Colleges

Volume 10 JULY, 1935 Number 4

Study of Applicants for Admission to the 1934 Freshman Class of Seventy-nine Medical Schools*

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Often the question has been asked as to the number of applicants seeking admission to medical schools and how many applications they make; how many are accepted; the reasons for rejection; how many of those accepted matriculate; the preparation of the applicants; whether there is any discrimination against those who have the minimum preparation, and, on the other hand, whether holders of degrees are favored.

Medical schools endeavor to select the best prepared students from among those who make application for admission, such selection being based, in the main, on the scholarship record of the applicant in the arts college. Other aids in making a selection are also used. Therefore, the applicant with the longest preparation in point of time, or the degree holder, is by no means certain of selection, despite the fact that the college may, in its annual announcement, make the statement that the criterion for admission is two years of college work, or three years, with prescription as to science subjects. It has often been said that the applicant with the minimum of preparation does not have any chance of being accepted; and, per contra, that the holder of a degree is almost certain of being accepted.

This study was undertaken, partly, to furnish some definite and accurate data which would throw light on these heretofore irrefutable assertions.

Then, too, it is now possible to give information on the number of applications being made each year, the number of applicants and the geographic distribution of the applicants. Also, how many applications are being made by one individual, and how many of these multiple applications and applicants are accepted or rejected. The reason for rejection can also be shown, in most instances; how many of the applicants are repeaters and how many of these are accepted.

*This study is one of the projects of educational research sponsored by the Association of American Medical Colleges, the cost being an item in the annual budget. (Seventh study).

Many other moot points can be cleared up by analysis of the data submitted herewith. They are too numerous to permit of analysis in the limited space available for the publication of this study. However, many, if not all, individual interests which those for whom this study was made may have can be satisfied by a study of these data.

Applicants do not always answer truthfully the query as to whether they have made application elsewhere; nor that they have attended a medical school previously and failed to pass. The last statement is especially true in the case of such applicants seeking admission to a foreign medical school. The data supplied by this study, together with other data on file in the office of the Association, make it possible to give exact information on these points. Some medical colleges like to have a report on the application record of their students. They submit the roster of the freshman class for such a report. The many thousands of cards on file in this office furnish the answer.

State boards of licensure not infrequently ask for the application record of graduates seeking licensure. Hundreds of American students are attending the so-called extramural medical schools of Great Britain. They are not listed on the British medical student's register, hence their credentials are not submitted to the General Medical Council of Great Britain. Nor are the credentials of these students presented for evaluation in this country. The only record against which a check can be made on them are the cards used in this study.

The study has been made over a period of seven years since it was begun in 1926 (the study was not made in 1930 nor in 1931). Nearly 200,000 cards are on file, representing more than 70,000 applicants, collected during seven years of investigation. The number of applicants has increased nearly 30 per cent since 1926, the rise being a steady one through all the years of the depression. The number of applications has likewise increased by about 30 per cent. There has not been any abatement in the desire of young men and women to become physicians. The reason therefore is, of course, a debatable one. It cannot be discussed here. Only the facts elicited by this study can be presented at this time.

Table 1 presents a summary on applicants and applications and the disposition made in each case. For purposes of comparison the data of the 1933 study are also submitted.

Several facts are outstanding and most interesting. First, there was an increase of 9 per cent in the number of applications made in 1934 over the number made in 1933, and an increase of 5.5 per cent in the number of applicants. The single applicants increased by 5 per cent; the multiple applicants by 0.5 per cent. Second, the number of rejected applicants was 14.5 per cent greater in 1934 than in 1933. The number of single appli-

cants accepted in 1934 was nearly the same (one less) in 1934 as in 1933; the number of multiple applicants accepted was 0.9 per cent less in 1934 than in 1933. The total number of acceptances in 1934 was 0.9 per cent less in 1934 than in 1933.

Later it will be shown that while some medical schools accepted more applicants in 1934 than in 1933, most of the schools accepted a smaller number, hence the number accepted was smaller, even if only by less than one per cent, than in the previous year. Attention must be called to the fact that all accepted applicants do not matriculate. In 1933, only 88 per cent (6,650) of the 7,550 applicants accepted were reported as having matriculated. Of the 7,419 applicants accepted in 1934, 6,702, or 90.3 per cent matriculated, the largest freshman class of all time.

TABLE 1. SUMMARY OF TOTALS OF APPLICANTS AND APPLICATIONS AND DISPOSITION IN 1933 AND 1934.

	1933	1934
Number of applications	29,705	32,321
Applications accepted	9,123	8,854
Number of applicants	12,128	12,779
Single applicants	7,269	7,623
Accepted	4,434 (60.9%)	4,433 (58.1%)
Rejected	2,835	3,190
Multiple applicants	4,859	5,156
Accepted	3,109 (63.1%)	2,986 (57.9%)
Rejected	1,750	2,170
Total applicants accepted	7,543 (62.1%)	7,419 (57.9%)
Total applicants rejected	4,585 (37.9%)	5,360 (42.1%)

It is not possible at this time to give the reason or reasons why all of the accepted applicants do not matriculate. If this study were continued to include a comparative study of matriculants and accepted applicants based on the cards of previous years, it might be possible to show that some of those applicants who did not matriculate decided to continue their studies in the arts college feeling certain that having been accepted on the basis of minimum requirements, additional work in college would not lessen their chance of being accepted on the next application. True, some of these students may have changed their mind about studying medicine; others may not have been able to provide sufficient funds to carry on.

Medical schools always accept more applicants than they expect to matriculate to assure a full class. Many applicants are accepted by more than one medical school. Thus, they can and do make a choice of the school they wish to attend. We do know this: that some applicants have made many applications each year, year after year, and even in foreign medical schools, and are still applying having failed to be accepted anywhere. One man has made 72 applications in three years, not including

TABLE 2. DATA BY COLLEGES ON TOTAL NUMBER OF APPLICATIONS MADE AND ACTION THEREON (MEN AND WOMEN)

School	I					II		III	Accepted	Rejected	Total	Registered in Medical Courses
	1	2	3	4	5	1	2					
Alabama	101	2	4	266	36	108	38		103	452	555	71
Arkansas	98	2	58	7	12	19			100	96	196	81
Med. Evangelists	132		32			42		39	132	113	245	111
Stanford	82		101			20		6	82	127	209	61
California	77		13	107		35		6	77	161	238	64
So. California	56		53	23	3	36		20	56	135	191	54
Colorado	52	4	3	27	1			3	56	34	90	51
Yale	100		210	82				1	100	293	393	44
Georgetown	202		2	681	15	18	10	83	202	809	1011	129
Geo. Washington	131		5	435	1	22		104	131	567	698	81
Howard	59		65	1	3	7	27	39	59	142	201	40
Emory	72	4	27	25	1	1		59	76	113	189	63
Georgia	45	4	22	2	4	6	5	2	49	41	90	41
Loyola	173	24	5	107	13	29		100	197	254	451	161
Northwestern	131	1	552	6	4	3		585	132	1150	1282	128
Univ. of Chicago	167		242	98		32		7	167	379	546	114
Illinois	188	4	137	48		27		50	192	262	454	171
Chicago Medical	100	10		3	12	7	9	5	110	36	146	71
Indiana	140	2	8	150	2	1	32	159	142	352	494	126
Iowa	111		7	23		5	35	1	111	71	182	111
Kansas	97		61	19		20	15	35	97	150	247	99
Louisville	138	5	22	425	1		3	25	143	476	619	95
Tulane	223	3	90	20	11	43	25	9	226	198	424	123
Louisiana	127	11	63	61	25	1	7	6	138	163	301	119
Johns Hopkins	104		23	116		59			104	198	302	61
Maryland	162		261	244	1	12		35	162	553	715	111
Boston	97		32	143			2	7	97	184	281	69
Harvard	152		318	184				18	152	520	672	128
Tufts	194		211	159		43	74	27	194	514	708	134
Wayne	99			9	1	34		14	99	58	157	87
Michigan	176		18			253			176	271	447	135
Minnesota	177		9	29	1	7		123	177	169	346	151
Mississippi	26			13		14		3	26	30	56	22
St. Louis	270		36	703	30		8		270	777	1047	146
Missouri	49	5	38	22	3	3		10	54	76	130	45
Washington	104		106	185	2	14	7	36	104	350	454	81
Creighton	126	4	16	51	1	11	2	14	130	95	225	91
Nebraska	123	5	51	14		2		2	128	69	197	100
Dartmouth	23	1	2	37	7	2	2	98	24	148	172	21
Albany	48		17	218			3	51	48	289	337	51
Columbia	108		446	281	1	4			108	732	840	110
Cornell (Ithaca)	35	1	4	37		1		21	36	63	99	24
Cornell (N. Y.)	133		40	630	1			33	133	704	837	53
Long Island	144	2	94	56	2	2	4	911	146	1069	1215	104
New York Homeo.	125	7	553	1	10		2	44	132	610	742	83
New York Univ.	189		218	466		7			189	691	880	150
Syracuse	82		406		4		1	37	82	448	530	50
Buffalo	109		466	104	17	3	1	270	109	861	970	74
Rochester	60		194	124					60	318	378	41
Duke	107	3	9	477	3				110	489	599	63

TABLE 2—Continued

School	I					II		III	Accepted	Rejected	Total	Registered in 1934 Class
	1	2	3	4	5	1	2					
North Carolina	48		28	11		5		8	48	52	100	42
Wake Forest	40			4				6	40	10	50	33
North Dakota	41		3	15	1	4	8	82	41	113	154	30
Ohio State U.	106	1	55	34	6	19		42	107	156	263	100
Cincinnati	117	1	146	42	1	67			118	256	374	74
Western Reserve	110	7	38	352	1	12		59	117	462	579	80
Eclectic	70		1	11	4	9		30	70	55	125	46
Oklahoma	66	1	17	44	1	2			67	64	131	62
Oregon	98		108	37	1	40		3	98	189	287	67
Hahnemann	294		79		4	2		366	294	451	745	162
Jefferson	190		50	197	4	14		174	190	439	629	155
Pennsylvania	162		618	99		2		49	162	768	930	127
Temple	163	1	388	421	11	15	1	1	164	837	1001	113
Pittsburgh	71		168			14		12	71	194	265	67
Woman's Medical	56	4		7	1	2	19		60	29	89	38
Med. Coll. So. Car.	42	3	114	1	15	7	30	111	45	278	323	42
Univ. So. Dakota	40		6	19	2	3	1	17	40	48	88	30
Meharry	97	9				9	6		97	24	121	75
Tennessee	161	3	7	71	5	1			164	84	248	122
Vanderbilt	69		51	219		20	4	29	69	323	392	54
Baylor	114	9	48	21	20	15		12	123	116	239	121
Texas	104			65	7			31	104	103	207	113
Utah	35		34			7			35	41	76	32
Vermont	53		51	11		12		68	53	142	195	45
Med Coll. Virginia	122		206	58	11	31	4	23	122	333	455	94
Virginia	76		26	157	3	15	8	15	76	224	300	75
West Virginia	90	7	116	11	2	27	5	230	97	506	603	80
Marquette	137		104	79	1	4		38	137	226	363	99
Wisconsin	117		27	43		9		5	117	84	201	115

applications made to schools in Great Britain (an extramural school accepted him) a record of which is on file in this office.

The chances of acceptance of single and of multiple applicants are about the same. In 1933, more multiple applicants were accepted than single applicants, 63.1 per cent as against 60.9 per cent. In 1934, the reverse was true, although in less degree, 58.1 per cent of the single applicants having been accepted as against 57.9 per cent of the multiple applicants. The difference was only 0.2 per cent.

The total acceptances for both single and multiple applicants was considerably less in 1934 than in 1933, 57.9 per cent as against 62.1 per cent. The actual number accepted was also less, by about 2 per cent. Naturally, the rejections were greater in 1934, 42.1 per cent, than in 1933, 37.9 per cent.

On the whole, then, while the number of applicants in 1934 increased 5.5 per cent over 1933, the number of acceptances was less. The whole difference is 7.5 per cent.

Table 2 presents data on applications only: It is based on the cards returned by the medical schools and is a complete summary of all the cards. Duplicates were not counted, nor were the cards of applicants for admission to other than the freshman year nor to the 1935 class. The headings are the same as those appearing on the cards. Item IV is omitted as it deals only with preparation and not action. The headings are reproduced herewith.

I. Credentials satisfactory quantitatively.
   1. Accepted, matriculating for first time.
   2. Accepted, repeating freshman year.
   3. Refused because class full. (Credentials acceptable).
   4. Refused because of personality or poor scholarship.
   5. Refused because of unsatisfactory work at another medical school.

II. Credentials examined and found inadequate quantitatively.
   1. To meet requirements of this school.
   2. To meet minimum requirements of A.A.M.C.

III. Credentials not submitted or examined. (No action taken).

It will be noted that 14 colleges received about the same number of applications in 1934 as in 1933. Fourteen colleges received fewer applications in 1934; 51 colleges received more applications in 1934 than in 1933. In most of these instances, the increase was variable; in some it was considerable; one school received almost twice as many, 334 in 1933 and 603 in 1934. The highest number of applications received by any one school was 1,282; next came 1,215; 1,047 and 1,001. The remaining schools received each less than one thousand applications.

Twenty-one schools accepted approximately the same number of applicants in 1934 as in 1933; 36 accepted fewer applicants; 22 accepted more applicants. In several instances the increase was a notable one. The greatest number accepted by any one school was 294; next came 270; 226; 202; 197; 194; 192 and 190. The remaining schools accepted less than 190.

One hundred and fifty applications are reported as having been made by repeaters and accepted as against 183 in 1933.

As for the reasons for rejection: All of the items listed on the card can be evaluated accurately, except I-3, "class full." The colleges were requested to report under this head only such applications as would or could have been accepted on the basis of scholarship if the quota had not been filled, that is, scholarship satisfactory, quantitatively and qualitatively. Therefore, rejection for this reason cannot react detrimentally against the applicant.

Of the total rejections, 7,839, or 26.1 per cent, of the total number of applications fell into this classification (class full). Doubtless, many, if not all, of these applications were presented to some school which accepted the applicant inasmuch as the credentials under this classification

are supposedly satisfactory, although they may not meet the entrance requirements of every medical school.

Items I-4 and 5, II-1 and 2 refers definitely to rejection because of unsatisfactory credentials, either quantitatively or qualitatively, especially poor scholarship.

Under I-4, are listed 8,998 applications, or 27.8 per cent of the total number of applications made. Rejections under this head are definitely because of poor scholarship, very rarely because of poor personality. True, a school with high entrance requirements might check some applications under this head on the basis of quantity rather than quality, whereas, a school with lower requirements might feel justified in accepting the applicant. But this phase of the matter is not pertinent to this study.

Under I-5 fall 329 applications, 1.0 per cent of the total number of applications. These applications were made by repeaters who were not accepted by some schools, although they may appear as "accepted" under the heading I-2.

Under II-1 fall 1,320 applications, 4.1 per cent, and under II-2, 398 applications, or 1.1 per cent. These two items include only the cases of "inadequate preparation to meet requirements." They do not include rejection on the basis of poor scholarship. These applicants may lack credits in required subjects, or they do not have sufficient credits to meet the entrance requirements of the school or of this Association. Hence, rejection under these two heads cannot be regarded as a stigma or a reflection on the applicant's scholarship.

Tables 3 and 4 present the results of action on applications and applicants as correlated with the work done by the applicant in the arts college preparatory to the study of medicine.

Table 3 considers applications only. Some very interesting facts appear. One fact is outstanding, namely, that the number of applications made by applicants with less than four years of preparation (graduates and non-graduates) is steadily diminishing year by year. Whether this is the result of a feeling on the part of the intending medical student that the greater the number of credits he presents, the greater are the chances of having his application accepted, or whether he is fired by ambition or realizes the need and value of acquiring wider knowledge than can be obtained with only the minimum of two years of college work, cannot be stated, nor can it be educed from a study such as this. Then, too, it is possible that the present arrangement of college courses is such that in order to secure the required credits in required science subjects more time than the prescribed minimum of two years is inevitable. It is a fact that in some arts colleges two years of attendance will make it possible for the student to secure no more than the necessary credits in the science subjects. If he wishes to

broaden his education, he must spend more time in college. However, this assumption, although based on fact, does not answer the question completely inasmuch as the three year group is also lessening numerically. The emphasis placed in recent years on a number of suggested subjects, such as genetics, psychology, social science, comparative anatomy, necessitating longer attendance in college, may be responsible, in part, at least, for the longer preparation.

TABLE 3. ANALYSIS OF ACTION TAKEN ON ALL APPLICATIONS ON BASIS OF PREMEDICAL PREPARATION

Action Taken	1 year or less	2 to 3 years	3 to 4 years	4 or more years	A.B.	B.S.	Other degrees	Not stated	Totals
I.									
1	1	1361	2293	553	2393	1874	119	152	8746
2		26	40	17	35	25	3	2	148
3	2	341	1425	470	2490	2872	66	158	7824
4	7	477	1963	869	2613	2829	62	186	9006
5		32	61	20	100	64	4	35	316
II.									--
1	2	225	389	130	281	186	26	45	1284
2	9	96	79	20	76	56	9	43	388
III.	4	146	769	318	753	1082	57	1480	4609
Totals	25	2704	7019	2397	8741	8988	346	2101	32,321

SUMMARY

1 year or less of preparation	25	
Accepted	1	
2 to 3 years of preparation	2704	
Accepted	1387	51.2%
3 to 4 years of preparation	7019	
Accepted	2333	33.2%
4 or more years of preparation	2397	
Accepted	570	24.1%
A. B. degree	8741	
Accepted	2428	27.7%
B. S. degree	8988	
Accepted	1899	21.1%
Other degrees	346	
Accepted	122	32.3%
Preparation not stated	2101	
Accepted	157	7.5%

In 1934, 7.5 per cent fewer applications were made by applicants with less than three years of preparation than were made in 1933, and 11 per cent fewer such applications were accepted. In the 3 to 4 years group, 3 per cent fewer applications were received and 8 per cent fewer were accepted than in 1933. In the more than 4 years group (non-graduates) 12.5 per cent more applications were received and 20 per cent more were accepted. In the A.B. group, 16.5 per cent more applications were received, but 5 per cent fewer were accepted. In the B.S. group, 9 per cent more applications were received and 2.5 per cent fewer applications were ac-

cepted. In the "other degrees" group (Ph.D.; D.D.S.; Ph.G.; D.Ph., etc.), 10 per cent more applications were received and 40 per cent more applications were accepted.

The number of applications on which the preparation of the applicant was not stated was considerably larger in 1934 than in 1933, 2,101 as against 1,548. The fault for failure to give this information lies with the reporting medical school. Many of these applications were either not accepted or were not acted on, hence the need for reporting on this item may not have been considered essential or important. Therefore, if the information had been given it probably would not have changed the results in the case of the accepted group very much but it would have done so in the case of the rejected group.

TABLE 4. ACCEPTANCES AND REJECTIONS OF APPLICANTS ACCORDING TO LENGTH OF PREMEDICAL PREPARATION.

	Single Applicants		Multiple Applicants		
	accepted	rejected	accepted	rejected	Totals
Less than 1 year....	1				1
1—2 years.....	12	25		1	38
2—3 years.....1074		616	172	120	1982
3—4 years.....1428		839	629	510	3406
4 or more years	266	246	138	128	778
A. B. degree	879	409	1110	618	3016
B. S. degree	658	440	898	739	2735
Other degrees.....	71	67	37	29	204
Not stated	44	548	2	25	619
Totals 4433		3190	2986	2170	12,779

Summarizing the findings presented in this table, it is evident that more of the 2 to 3 year applications were accepted than of those in any other group. The smallest number of applications accepted fell in the B.S. group, despite the fact that this group would doubtless be able to meet all the requirements so far as required science subjects are concerned. The chances of acceptance in the 2 to 3 year group are 1:2; in the 3 to 4 year group, 1:3; in the 4 or more years group, 1:4; in the A.B. group,1:3.6; in the B.S. group, 1:4.75; in the "other degrees" group, 1:3. It must be stated with reference to the 2 to 3 years group that very few of the applications represented the minimum of 2 years of college work. Most of them fell into the 65 to 72 hours group (work done during a summer session), which is a large determining factor in the large number of acceptances in this group.

Table 4 represents the data on the preparatory work done by the applicants and whether they were accepted or rejected. A division is made as to whether they were single or multiple applicants.

The largest number of single applicants was in the 3 to 4 year group, 2,267; the smallest number was in the 4 or more years group 512, not

considering the "other degrees" group in which there were only 138 applicants. The largest number of multiple applicants were in the A.B. group, 1,728; the smallest number were in the four or more years group, 266, again not considering the "other degrees" group in which there were only 66 applicants. The 2 to 3 years group was second with 292 applicants.

Table 5 shows in percentages the number of applicants accepted in each group and the percentage for each group as of the total number of applicants. In other words, of the 2 to 3 year applicants, who constituted 15.5 per cent of the total number of applicants, 62.3 per cent were accepted. No distinction is made as between single and multiple applicants. Although

TABLE 5. PERCENTAGE OF APPLICANTS ACCEPTED ACCORDING TO PREMEDICAL PREPARATION AND PERCENTAGE OF TOTAL NUMBER MAKING APPLICATION.

2—3 years, accepted	62.3%	applied 15.5%
3—4 years, accepted	60.3%	applied 26.6%
4 or more years, accepted	51.9%	applied .6%
A. B. degree, accepted	65.9%	applied 23.6%
B. S. degree, accepted	56.8%	applied 21.4%
Other degrees accepted	52.9%	applied 1.5%
Not stated, accepted	7.4%	applied 4.7%

the 3 to 4 years group included the largest percentage of applicants, the A.B. group had the largest percentage of acceptances. It was second in number of applicants. The 2 to 3 years group was second in percentage of acceptances and fourth in the number of applicants. The B.S. group was third in the number of applicants and fourth in the number of acceptances.

It is evident, then, that there is not any discrimination against those applicants who have less than 3 years of college work. The A.B. and B.S. men are virtually on the same footing, although the chance of being accepted is somewhat in favor of the A.B. men. Doubtless this is due to the fact that experience with both groups in medical school has proven that the A.B. men do better work than the B.S. men. Apparently a little less science in college gives opportunity to take more cultural subjects and makes for better accomplishment in medical school.

A check on the freshman class of 1934 as to preparation for the study of medicine shows that only 16 per cent had less than three years of college work; 52 per cent had a degree. Table 5 shows that 45 per cent of the applicants had a B.S. or A.B. degree. Doubtless the difference between these two percentages can be accounted for by the fact that "other degrees" were included in the degree group at matriculation.

Table 6 represents the data on applications made by women. Seventy-two of the seventy-nine colleges included in this study reported on women applicants. Apparently, women were ablaze with ambition in 1934 to study

TABLE 6. DATA BY COLLEGES ON APPLICATIONS MADE BY WOMEN.

	I					II		III	
	1	2	3	4	5	1	2		Totals
Alabama	2				1	2	3		8
Arkansas	5								5
Med. Evangelists	9		4			2		1	16
Stanford	3		4						7
California	2		1	12		2			27
So. California	2		5			3		2	12
Colorado	8			1					9
Yale	8		18	2					28
Geo. Washington	11			4		1		5	21
Howard	3		1		2		1	2	9
Georgia	1					2	1		4
Loyola	8		1		1			4	14
Univ. Chicago	16		5	1				1	23
Illinois	9	1	12	2		3		6	33
Northwestern	5		11	1				26	43
Chicago Medical	3					1			4
Indiana	4			3			6	4	17
Iowa	4			1			1		6
Kansas	10		2	1				1	14
Louisville	2		1	3			1	2	9
Tulane	4		4			2			10
Louisiana	9				6				15
Johns Hopkins	9		5	7		3			24
Maryland	10		3					1	14
Boston Univ.	9			3		1			13
Tufts	9		1	3		1	2	1	17
Wayne	5					2		2	9
Michigan	14					4			18
Minnesota	8							3	11
Mississippi	3			1					4
Missouri	2		2						4
Washington	6			1			1	2	10
Creighton	3					1			4
Nebraska			1						1
Dartmouth								2	2
Albany	2		2	3			2	2	11
Columbia	10		30	5					45
Cornell (Ithaca)	2	1		3					6
Cornell (N. Y.)	14		4	35				3	56
Long Island	10		3	2				13	28
New York Homeo	3		5						8
N. Y. University	13		6	13					32
Syracuse	2		1						3
Buffalo	6		1	1				7	15
Rochester	2		7	2					11
Duke	6			13					19
North Carolina	5		2						7
North Dakota	1			1				3	5
Ohio	5		4					3	12
Cincinnati	7		1						8

TABLE 6—Continued

	I					II		III	
	1	2	3	4	5	1	2		Totals
Western Reserve	8		1	4				1	14
Eclectic	2								2
Oklahoma	3								3
Oregon	6		1	1		3			11
Hahnemann								2	2
Pennsylvania	5		22	2				5	34
Temple	10		6	7		1			24
Pittsburgh	4		6			2			12
Woman's Medical	56	4		7	1	2	19		89
Med. Coll. South Caro.	3		2				4	2	11
Meharry	4	1				1			6
Tennessee	5			1	1				7
Vanderbilt	4		2	2			2	3	13
Baylor	6			1	1	1			9
Texas	8			4				1	13
Utah	3								3
Vermont	4		1			2		1	8
Med. Coll. of Virginia	6								6
Virginia	3			2					5
West Virginia	4					1		11	16
Marquette	4							1	5
Wisconsin	5		2	2		1			10

medicine. About 21 per cent more applications were made by them in 1934 (1,034) than in 1933 (833), and there was the same increase in the number of applicants, 507 in 1933; 636 in 1934. The single applicants numbered 458 (30 per cent more than in 1933); the multiple applicants, 178 (15 per cent more than in 1933). The acceptances were more numerous in 1934 than in 1933, although the ratio of acceptances to the number of applicants was about the same for both years.

TABLE 7. COMPARISON OF DATA ON WOMEN APPLICANTS OF 1933 AND 1934.

	1933		1934	
Total women applications	833		1034	
Applications accepted	410	(49.4%)	464	(44.8%)
Applications rejected	423		570	
Total women applicants	507		636	
Single applicants	355		458	
Single applicants accepted	200	(56.3%)	262	(51.0%)
Single applicants rejected	155		196	
Multiple applicants	152		178	
Multiple applicants accepted	116	(76.3%)	122	(68.5%)
Multiple applicants rejected	36		56	

Only seven of all women applicants were reported as repeaters. The Woman's Medical College reports having accepted 60 of the 89 applications received. Evidently the women prefer to attend a co-educational in-

stitution. Thirteen applications were refused because of unsatisfactory work in some other medical school.

Comparing the total acceptances with those of the women, the following appears: total single applicants accepted, 58.1 per cent; women, 56.3 per cent; total multiple applicants accepted, 57.9 per cent; women, 68.5 per cent. However, as the figures on the women applicants are small compared with the figures for both men and women, they probably have little significance. Only 5 per cent of all applicants were women, and the women accepted constituted 5 per cent of all acceptances.

The study of student accomplishment shows that the women compare favorably with the men as regards the quality of their work in medical school.

Table 8 gives the geographic distribution of all applicants. As in previous years, New York State furnished the largest number of applicants, 19.8 per cent, mostly resident in New York City. Pennsylvania is second with 9.3 per cent; Illinois is third with 7.2 per cent. Therefore, 36.3 per cent of the applicants came from three states in which 25 per cent of the population of the United States resides. About 51 per cent of the applicants came from six states each represented by more than 500 applicants. The population of these six states was approximately forty-six million, or 38 per cent of the total population of the United States.

It must be remembered in this connection that these six states account for a large number of the arts colleges of the country as a whole, hence more applicants would come from these states, and, furthermore, the medical schools in these states outnumber those of other states. One fourth of the medical schools included in this study are situated in New York, Pennsylvania and Illinois; eight are situated in California and Ohio; none in New Jersey. Hence, twenty-eight of the seventy-nine medical schools are situated in the five states having the largest number of applicants.

Nor is it possible to predict how many of these applicants will return to the state from which they made application. Yet, these figures may have an important bearing when the economics of the medical profession as a whole are discussed. Many states do not have a medical school, yet must be supplied with medical practitioners. However, previous studies have shown that 25 per cent of every entering class fails to graduate. If all of the applicants accepted in 1934 matriculate, which is not likely, judging by past experience, 5,600 will graduate. If, as in previous years, 12 per cent will not matriculate, the number of graduates in this class will be 5,000, far beyond the need for replacements.

Table 9 presents the data on the multiple applicants. It is purely informative and does not lend itself to discussion. Two applications were

TABLE 8. GEOGRAPHIC DISTRIBUTION OF 12,779 APPLICANTS*

	Single applicants	Multiple applicants	Total
New York	930	1602	2532
Pennsylvania	549	638	1187
Illinois	726	190	916
California	397	249	646
Ohio	327	311	638
New Jersey	210	358	568
Massachusetts	193	266	459
Texas	293	100	393
Michigan	246	95	341
Indiana	277	62	339
Wisconsin	247	58	305
Minnesota	210	34	244
Iowa	172	34	206
Missouri	158	46	204
Connecticut	79	122	201
West Virginia	134	62	196
Louisiana	165	27	192
North Carolina	122	65	187
Virginia	134	47	181
Oklahoma	136	41	177
Nebraska	153	23	176
Maryland	118	51	169
Tennessee	147	21	168
Georgia	126	42	168
Kansas	124	38	162
Kentucky	118	41	159
Washington	71	64	135
Mississippi	91	38	129
District of Columbia	89	37	126
Alabama	69	44	113
Arkansas	102	9	111
South Carolina	90	17	107
Colorado	80	10	90
Utah	51	29	80
Oregon	53	21	74
Rhode Island	27	46	73
North Dakota	61	10	71
Florida	42	29	71
New Hampshire	24	29	53
South Dakota	38	11	49
Vermont	42	1	43
Maine	23	20	43
Porto Rico	17	21	38
Hawaii	12	22	34
Idaho	19	14	33
Montana	22	8	30
Arizona	15	9	24
Canada	19	3	22
Delaware	9	10	19
New Mexico	12	5	17
Wyoming	11	4	15
Nevada	4	8	12
Cuba	9	1	10
Japan	5		5
India	3		3
Philippines	1	2	3

TABLE 8—Continued

	Single applicants	Multiple applicants	Total
Persia		3	3
Mexico	2		2
Balboa, Canal Zone	1	1	2
Austria	2		2
Brazil	1	1	2
China	1		1
South Africa	1		1
West Africa	1		1
Afghanistan	1		1
Egypt	1		1
France	1		1
Guam	1		1
England		1	1
Dominican Republic		1	1
Turkey		1	1
Greece		1	1
Nova Scotia	1		1
Panama	1		1
Columbia, S. A.	1		1
Peru	1		1
Syria	1		1
Newfoundland		1	1
Korea		1	1
Honduras	1		1
Ecuador	1		1
Costa Rica	1		1

*Note: Every state is represented and also Hawaii, Porto Rico, Philippines, Panama, Canal Zone, Cuba and 26 foreign countries.

made by 36.4 per cent of the multiple applicants; 3 applications by 18.2 per cent; 4 applications by 12 per cent. The remaining 33.4 per cent of the multiple applicants made from 5 to 37 applications. More than 10 applications were made by only 9.1 per cent of the applicants.

The fate of the accepted multiple applicant in medical school has not been investigated to an appreciable degree, but individual cases have shown that he is more often a failure than a success. Some of the applicants make all their applications at one time; others do so gradually, as they are rejected by one college after another. Some are never accepted. Of the 5,156 multiple applicants, 2,173, or 40 per cent, did not have any acceptances. On the other hand, 40 per cent of the single applicants were rejected. Therefore, the number of applications made does not enter into a discussion of acceptance or rejection.

The cooperation of the medical schools in this study is appreciated highly. A considerable amount of extra work was called for but was done cheerfully. The compiler of the data is most grateful to all those who have made this study possible.

TABLE 9. DETAILS ON 5156 MULTIPLE APPLICANTS AS TO NUMBER OF APPLICATIONS MADE, ACCEPTANCES AND REJECTIONS.

1876 made 2 applications=3752
710 had no acceptances.
1166 had 1510 acceptances.
1 acceptance—822
2 acceptances—344

938 made 3 applications=2814
337 had no acceptances.
601 had 873 acceptances.
1 acceptance—370
2 acceptances—190
3 acceptances— 41

625 made 4 applications=2500
227 had no acceptances.
393 had 657 acceptances.
1 acceptance—210
2 acceptances—128
3 acceptances— 49
4 acceptances— 11

393 made 5 applications=1965
165 had no acceptances.
228 had 382 acceptances.
1 acceptance—124
2 acceptances— 68
3 acceptances— 23
4 acceptances— 12
5 acceptances— 1

282 made 6 applications=1692
131 had no acceptances.
151 had 278 acceptances.
1 acceptance—76
2 acceptances—41
3 acceptances—20
4 acceptances—10
5 acceptances— 4

196 made 7 applications=1372
99 had no acceptances.
97 had 162 acceptances.
1 acceptance—56
2 acceptances—28
3 acceptances— 8
4 acceptances— 1
5 acceptances— 2
6 acceptances— 2

158 made 8 applications=1264
76 had no acceptances.
81 had 158 acceptances.
1 acceptance—43
2 acceptances—21
3 acceptances— 7
4 acceptances— 6
5 acceptances— 2
6 acceptances— 3

117 made 9 applications=1053
61 had no acceptances.
56 had 96 acceptances.
1 acceptance—31
2 acceptances—13
3 acceptances— 9
4 acceptances— 3

112 made 10 applications=1120
62 had no acceptances.
51 had 79 acceptances.
1 acceptance—33
2 acceptances—13
3 acceptances— 2
4 acceptances— 1
5 acceptances— 2

83 made 11 applications=913
58 had no acceptances.
25 had 33 acceptances.
1 acceptance—19
2 acceptances— 4
3 acceptances— 2

66 made 12 applications=792
43 had no acceptances.
23 had 43 acceptances.
1 acceptance—12
2 acceptances— 7
3 acceptances— 2
4 acceptances— 1
7 acceptances— 1

48 made 13 applications=624
32 had no acceptances.
16 had 20 acceptances.
1 acceptance—12
2 acceptances— 3
4 acceptances— 1

TABLE 9—Continued

36 made 14 applications=504
22 had no acceptances.
14 had 21 acceptances.
1 acceptance—10
2 acceptances— 2
3 acceptances— 1
4 acceptances— 1

45 made 15 applications=675
29 had no acceptances.
16 had 23 acceptances.
1 acceptance—10
2 acceptances— 5
3 acceptances— 1

36 made 16 applications=576
23 had no acceptances.
13 had 17 acceptances.
1 acceptance—10
2 acceptances— 2
3 acceptances— 1

33 made 17 applications=561
28 had no acceptances.
5 had 5 acceptances.
1 acceptance—4
4 acceptances—1

19 made 18 applications=342
14 had no acceptances.
5 had 6 acceptances.
1 acceptance—4
2 acceptances—1

15 made 19 applications=285
9 had no acceptances.
6 had 7 acceptances.
1 acceptance—5
2 acceptances—1

16 made 20 applications=320
8 had no acceptances.
8 had 13 acceptances.
1 acceptance—5
2 acceptances—2
3 acceptances—2

15 made 21 applications=315
11 had no acceptances.
4 had 4 acceptances.
1 acceptance—4

5 made 22 applications=110
3 had no acceptances.
2 had 9 acceptances.
4 acceptances—1
5 acceptances—1

6 made 23 applications=138
4 had no acceptances.
1 acceptance—2

6 made 24 applications=144
3 had no acceptances.
3 had 4 acceptances.
1 acceptance—2
2 acceptances—1

8 made 25 applications=200
6 had no acceptances.
2 had 5 acceptances.
2 acceptances—1
3 acceptances—1

6 made 26 applications=156
5 had no acceptances.
1 had 1 acceptance.

3 made 27 applications=81
1 had no acceptance.
2 had 3 acceptances.
1 acceptance—1
2 acceptances—1

2 made 28 applications=56
2 had 3 acceptances.
1 acceptance—1
2 acceptances—1

1 made 30 applications=30
1 acceptance.

1 made 31 applications=31
1 acceptance.

1 made 33 applications=33
1 acceptance.

3 made 34 applications=102
1 had no acceptance.
1 acceptance—2

3 made 35 applications=105
3 had no acceptances.

1 made 36 applications=36
1 acceptance.

1 made 37 applications=37
1 acceptance.

The Effect of the Depression on Medical Students of the Negro Group and on Internships Available*

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At the 1928-1929 meeting of this Association, I read a paper entitled "The Weakest Link" in which I raised the question whether there were enough hospitals available to give all Negro medical graduates an opportunity to get at least one year of internship in a good hospital.

At that time, just before the bursting of the prosperity bubble, we were beginning to run short of internships, and I recommended that we should provide more and better hospitals for internships for the increasing number of Negro medical students.

I have thought since then that it might prove interesting to you to learn what effect the depression has had on Negro medical students and graduates.

The information herein contained was elicited from the deans or presidents of medical schools, members of this association, whose schools usually train one or more Negro students; from the superintendents or medical directors of hospitals open for internships to Negroes; from state or federal agencies; and, in the part of the paper having to do with the Negro population and the present number of Negro physicians in southern cities, the information was obtained directly from reliable members of the Negro medical profession living in the respective cities. I believe the statistics to be fairly accurate.

The School of Medicine of Howard University at Washington, D. C., and the Meharry Medical College of Nashville, Tennessee, are the only two medical colleges of the United States and Canada which specialize in the training of Negro youth for medicine. These two schools have tried to maintain the high standards of this Association through the trying years of the depression. Probably Meharry has felt the strain even more than Howard, because the United States Government appropriates funds for Howard University, while Meharry is supported entirely through the benevolences of individuals and boards, foundations or other groups. To give you briefly the effect of the depression on the Negro medical students at Meharry Medical College, let me tell you this:

I think we will all agree that when any medical student has been promoted to the senior, or fourth year, there are only two things that will

*Read at the Forty-fifth Annual Meeting of the Association of American Medical Colleges held in Nashville, Tennessee, October 29-31, 1934.

prevent his entering on that fourth cycle—either death or lack of money. None of last year's senior class died, yet out of fifty-one students who were eligible for promotion, only thirty-seven returned last October to try to graduate with their class. Other classes were likewise cut down in numbers. Sixteen of last year's seniors were unable to return.

In my paper of 1928-1929 I made this statement: "But this lack of facilities in medical education is not, to my mind, the only weak link; for I consider it a far more serious problem and a problem more difficult of solution; how to provide the graduates with proper internships."

In 1929 there were more graduates from Howard and from Meharry than there were internships; but the depression has, temporarily, at least, changed that. Every graduate from Meharry in 1934, who wanted an internship, received an appointment. In fact, we had offered several internships in the late spring and summer which we could not fill. This is the more impressive when one learns that two or three Negro hospitals have been enlarged or new and larger ones have been built since 1929.

I believe that the present decrease in medical students is a temporary one, and is due to the depression. I believe if and when the economic condition of the Negro approaches something like what it was in 1929, Howard and Meharry will, together with those Negro physicians supplied by schools for white students, supply enough graduates to fill the internships now available.

In 1929 there were 31 Negroes in 12 schools other than Howard and Meharry. In the same schools in 1933 there were 26, or a decrease of 5.

In the two schools specializing in Negro medical education, Howard and Meharry, there were 452 students in 1929 and only 370 in 1933, or a decrease of 82. The total number of Negro students in all medical schools in 1929 was 483, while in 1933 it was 396, a decrease of 87.

In 1929, twelve hospitals were recognized by the Council on Medical Education and Hospitals of the American Medical Association as being adequate for giving internships available for Negroes, and these hospitals offered 114 internships.

In 1933, there were sixteen such hospitals and they offered 127 internships, or an increase of thirteen internships. Since 1929, the following hospitals have been made available: Provident Hospital of Baltimore; Cleveland City Hospital, Cleveland; L. Richardson Memorial Hospital of Greensboro, North Carolina, and Saint Mary's Infirmary of St. Louis. The following hospitals have had additions or enlarged and improved their facilities since 1929—General Hospital No. 2, Kansas City, Mo.; Provident Hospital, Chicago, and Hubbard Hospital of Meharry Medical College, Nashville. In this period, two hospitals were dropped, namely: Fred

Douglas Hospital of Philadelphia, and John Archibald Hospital of Thomasville, Georgia.

Table 1 will show you briefly the data elicited by our questionnaires:

There are no recognized available hospitals for Negro interns in Texas, Arkansas, Mississippi, Florida, West Virginia, Virginia, Oklahoma, Kentucky and South Carolina. In all these states there is a tremendous Negro population.

TABLE 1—TABULATION OF ANSWERS FROM QUESTIONNAIRE SENT TO WHITE MEDICAL SCHOOLS

Name of school	No. Negro Students 1929	No. Negro Students 1933	Increase or Decrease	Comments Re: Depression
University of Chicago.....	3	4	+1	Number of applicants reduced 50 per cent.
University of Illinois.....	4	1	—3	Doubt if it has made much difference here.
Coll. of Medical Evangelists...	4	5	+1	Cutting down the number of applicants for admission.
State University of Iowa....	4	1	—3	No effect as far as this institution is concerned.
Columbia University.....	3	3		Fewer applicants have been received, but cannot say that it is an effect of the depression.
University of Pennsylvania..	5	3	—2	Has affected them in the same way as the white students.
New York University.....	4	1	—3	No knowledge.
University of Minnesota....	2	1	—1	Nothing especial; of course, able men ought to be helped.
University of Michigan.....	No record	3		Seems to have had an effect.
Harvard University.....	No separate record	2		
Western Reserve University.	1	2	+1	It has been particularly hard on them.
Indiana University.....	4	4		They are used to it and meet it very creditably.
TOTAL	34	30	—4	

After prosperity returns what then? Well, perhaps, we had better not cross that bridge 'till we come to it.

This is true, most of Meharry's students come from southern states and most of our graduates practice in southern states. Therefore more hospitals should be available for Negroes in southern states.

What becomes of our graduates after their interships? I fear that they follow the example of white youth and crowd into the large cities, while the great rural communities and the host of small towns go a-begging. Take four examples:

The Negro population of the State of Mississippi is 1,011,718, and there are only 29 Negro dentists, or one dentist to every 34,507 people; there are only 71 physicians, or one Negro physician to every 14,094 people; there are only 125 nurses, or one nurse to every 8,005 people.

The Negro population of the State of Georgia is 1,071,125. For this

vast population there are only 59 Negro dentists, or one dentist to every 18,154 people; there are only 193 Negro physicians, or one physician to every 5,549 persons; there are 595 nurses, or one nurse to every 1,800 of the population.

TABLE 2—TABULATION OF QUESTIONNAIRE SENT TO HOSPITALS

Name of Hospital	No. Interns 1929	No. Interns 1933	Increase or Decrease	Need for Next 5 Years	Comments Re: Depression
General Hosp. No. 2 Kansas City, Mo.	12	12		3 more	Feel that the depression has reached climax, as far as Negro interns are concerned, we doubt that our handicap was due to the depression.
Cleveland City Hosp. Cleveland	Did not reply				
St. Agnes Hosp. Raleigh, N. C.	3	3		2 more	As we had not been paying interns, we felt it was the cause of our obtaining only one for this year.
John A. Andrew Hosp. Tuskegee, Ala.	2	2		Can't say	It just happens that we have no trouble getting our interns; have more applicants than can handle.
Grady (Colored Unit) Atlanta, Ga.	On list but no appointments ever made.				
City Hosp. No. 2 St. Louis	14	16	+2	4 each year	Difficulty in securing interns after July first.
Provident Hosp. Baltimore	7	7			
Freedmen's Hosp. Washington, D. C.	26	26		same	Have not been affected adversely.
L. Richardson Hosp. Greensboro, N. C.	2	1	—1	1 more	In 1930 dropped one intern due to the depression.
Flint-Goodridge Hosp. New Orleans	2	3	+1	2 prob.	
Mercy Hosp. Philadelphia	5	5			Less number of applicants but more than we could take care of.
Harlem Hosp. New York City	30	37	+7	same	
Provident Hosp. Chicago	4	6	+2		
Lincoln Hosp. Durham, N. C.	3	3		2 more	
Hubbard Hosp. Nashville	4	6	+2	2 more	More applicants.
St. Mary's Infirmary St. Louis	Not open	4		1 more	Difficulty in getting Negroes.
TOTAL	114	127	+13		

The Negro population of the State of Louisiana is 775,326, and there are only 45 dentists, or one dentist to every 17,251 people; there are only 107 physicians for this population which is only one physician to every 7,255 people; there are only 159 nurses which is only one nurse to every 4,913 people.

The Negro population of the State of South Carolina is 793,681; there are only 54 Negro dentists, which makes only one dentist for 14,697 people; there are only 67 physicians, or only one physician to every 11,854 people; there are only 288 nurses, or only one nurse to 2,755 people.

Surely, these four examples prove that there is a real need which should be accepted as a challenge by young Negro medical men.

The above statistics refer to the respective states as a whole. I was curious to see how these state figures compared with the supply of Negro physicians in larger cities and towns of these and other states.

I think the data will prove that one cause of the "depression" among the physicians is the lack of proper distribution. There is surely no oversupply of Negro physicians in rural Mississippi or in rural Georgia, nor in many other states, but the need is great. The problem is to get the young Negro medical men to go where they are needed and stop them from crowding into the big towns and cities. We need some of that old pioneer spirit in the medical profession. The spirit that will make men willing to endure the hardships and inconveniences of frontier and rural life, for the people's sake.

TABLE 3—NUMBER OF PEOPLE PER NEGRO PHYSICIAN IN SEVERAL TYPICAL CITIES

Name of City	Negro Population	No. Negro Physicians	No. Persons Per Physician
Hot Springs, Ark.	4,000	8	500
Miami, Fla.	29,000	12	2,416
Augusta, Ga.	24,190	13	1,860
Macon, Ga.	31,000	8	3,875
Savannah, Ga.	28,896	21	1,852
Chicago	250,000	250	1,000
Lexington, Ky.	12,000	14	857
Louisville, Ky.	47,354	34	1,392
Baton Rouge, La.	14,000	8	1,750
New Orleans	132,000	36	3,666
Baltimore	140,000	80	1,750
Detroit	110,000	90	1,222
Columbus, Miss.	5,500	2	2,750
Hattiesburg, Miss.	8,000	3	2,666
Natchez, Miss.	7,500	4	1,875
Vicksburg, Miss.	12,000	4	3,000
Kansas City Mo.	40,000	38	1,052
St. Louis, Mo.	90,000	102	882
Charlotte, N. C.	28,000	9	3,333
Cleveland	76,000	47	1,617
Oklahoma City	16,000	15	1,066
Philadelphia	210,000	190	1,105
Pittsburgh	40,000	29	1,378
Charleston, S. C.	28,062	11	2,551
Memphis, Tenn.	96,550	66	1,469
Nashville, Tenn.	42,836	60	713
Dallas, Texas	40,000	23	1,739
Houston, Texas	70,000	21	3,333
Norfolk, Va.	43,000	24	1,791

Think of it! Not one Negro physician to every 14,000 Negro people in rural Mississippi and yet there are only 1,875 people to every physician in the city of Natchez. Proper adequate distribution is needed in medicine as well as in agriculture today.

Not one Negro physician to every 11,000 people in rural South Carolina, yet in the City of Charleston there are only about 2,251 people for each Negro physician to serve. Again, I repeat, that the crying need is better distribution of physicians.

There are twenty-one Negro physicians in Savannah, which gives only 1,852 Negro people to every Negro physician, while in the State of Georgia as a whole, there is only one Negro physician, to every 5,549 of

the population. In Georgia, too, the need you will see, is for more country doctors.

Surely something must be done by leaders of the medical profession to supply the rural communities such as I have alluded to in Mississippi, Georgia, South Carolina, etc., with adequate medical service. If, and when, the time comes when there are not enough hospital internships to go around, would it be wise and feasible to arrange for young medical men

TABLE 4—DEATHS OF NEGROES FROM ALL CAUSES EXCLUSIVE OF STILLBIRTHS

State	1930 Negro Population July 1, 1930	1930 No. Deaths	1930 Rate Per 1,000	1931 No. Deaths	1931 Rate Per 1,000	1932 No. Deaths	1932 Rate Per 1,000
Georgia	1,067,000	17,182	16.1	15,994	15.0	15,307	14.3
Mississippi*	1,011,000	14,910	14.7	13,296	13.2	11,972	11.8
North Carolina	922,000	13,976	15.2	12,797	13.9	11,394	12.4
Tennessee	478,000	8,744	18.3	8,013	16.8	7,799	16.3
Illinois	333,000	5,824	17.5	6,191	18.6	5,785	17.4
Pennsylvania	435,000	7,459	17.1	7,664	17.6	6,962	16.0

to serve in the rural communities for a specific period, say two or three years; this term of service to be accepted by licensing boards and medical examiners in lieu of a hospital internship? I predict that if and when the depression passes there are going to be more Negro applicants for internships than there are places available. There may be serious questions, both financial and politic, as to where and how many hospitals to build, but

TABLE 5—DEATHS AMONG WHITE AND NEGRO POPULATION

State	Death Rate Per 1,000 Population From All Causes in 1932 Total	White	Colored
Georgia	11.0	9.1	14.5
Mississippi*	10.0	8.2	11.7
North Carolina	9.6	8.5	12.1
Tennessee	10.8	9.6	16.2
Illinois	10.7	10.5	15.4
Pennsylvania	11.2	11.0	15.3

*Death rate is lowest for Negroes of the six states, yet it has no recognized hospitals, for internships.

surely no sane man can refute the fact that there is a tremendous challenge facing young Negro medical men, so long as there is such a scarcity of practitioners of medicine and of dentistry in the rural Negro communities.

These statistics bring out an interesting revelation. I asked myself the question: "How does the death rate of Negroes in these states, where there is such a scarcity of Negro physicians and of recognized Negro hospitals, compare with the death rate in states where physicians and hospitals are more numerous?" Let us look at the mortality statistics for four Southern States and for two Northern States for a three year period. The data came from Bureau of the Census, Division of Vital Statistics, U. S. Government.

How does the death rate of Negroes compare with death rate among the white population in the same states?

At first glance, these tables might be taken to mean that an abundance of physicians and of recognized hospitals in a state mean a higher death rate. For, paradoxical as it may appear, the State of Mississippi which, according to these tables, has the least number of registered Negro physicians and the least number of recognized hospitals (none at all) has the lowest death rate. But, perhaps, the more rational explanation is that because of the very lack in Mississippi of both physicians and of recognized hospitals, I say, possibly, this lack explains the apparent low death rate, i. e., can it be that the reporting of deaths is not as carefully carried out as in some of the other states? It is an accepted fact, I think, that wherever you have an abundance of good physicians and of good hospitals, there you will find more detailed and more complete vital statistics.

SUMMARY

1. A comparison of conditions in 1929 with conditions in 1934 in Negro medical colleges and hospitals shows a considerable decrease of students and an impressive increase in internships available.

2. Temporarily, there are more internships available than there are eligible senior medical students to fill them.

3. There has been a marked decrease in the number of Negroes in the northern and eastern medical schools.

4. Negro hospitals have been improved and they have increased in number; on the other hand, two have lost recognition, in the period 1929-1933, inclusive.

5. One or two hospitals, though presumably available, have never made appointments of Negro interns.

6. Several southern states have no recognized hospitals available, Arkansas, Alabama, Mississippi, Florida, South Carolina, Oklahoma, West Virginia, Virginia and Texas, yet Negroes have a tremendous population in these states.

7. What is the reason that the State of Mississippi, that has fewest physicians and recognized hospitals, has the lowest death rate? Is it due to the fact that vital statistics are poorly recorded?

8. Most of Meharry's students come from southern states and most of them stay and practice in southern states; therefore, more internships should be provided in these states.

9. There is an abundance of Negro physicians in most of the large cities and towns of the South, but a great scarcity in the rural South. More adequate distribution is the great need!

10. Negroes themselves, can and should answer this rural need. The white population should help them in providing more hospitals to lessen

the great need for better and recognized hospitals for interning in Mississippi and other southern states.

11. I suggest that medical leaders should give very careful consideration to the idea of developing an extramural internship for young graduates of medicine, not only of the Negro race, but also of the Caucasian race, by allowing them, and even encouraging them to serve in rural communities for a period of two years. This term of service should receive proper recognition from state and national boards of examiners, when properly vouched for by the respective county and state medical societies.

12. I again repeat that there still exists a tremendous and an urgent need for thoroughly trained general Negro practitioners of medicine and of dentistry, especially in the rural South. Both Howard and Meharry should improve their equipment and teaching staffs and endeavor in every legitimate way to persuade their graduates to answer this challenge to Negro physicians and dentists to do a real service in behalf of their own people in the smaller towns and country districts, especially in the South. The Negro medical and dental groups ought to help answer this call.

DISCUSSION

DR. NUMA P. G. ADAMS (Howard University, Washington, D. C.): I am greatly indebted to Dr. Mullowney for this very interesting presentation of a subject which you will immediately suspect would be interesting to us at Howard University. As a matter of fact, the Meharry Medical College and the College of Medicine at Howard University together are now graduating about 85 per cent of all the Negro physicians of the United States.

We in Howard University have not been very much alarmed about the effect of the depression on the number of Negro medical students. We are alarmed more about the effect of the depression on those select students whom we would admit but who cannot study medicine because of this depression. It is not only within the last two or three years that the Negro has been feeling the effect of the depression. The depression is chronic with Negroes. They brought it from Africa. Within the last two or three years we have merely had more depression than we have had before.

In 1931, Richard Hurst Hill made a study at Howard University of the need of scholarships for Negro students of university grade. In this study he included a study of the need of scholarships for Negro medical students. As a result of that study, Hill found the average cost of medical education per medical student at Howard University to be $1,000 a year. The student pays to the university approximately one-third of that amount. Upon the basis of a study of the family income of Negro parents, Hill estimated in 1931 that the college needed twelve scholarships at $350 each, twenty scholarships at $250 each, and fifty-six scholarships at $200 each.

The university has not had money available for scholarships. It has tried to meet this need somewhat within the last two years by crediting 7.5 per cent of the expected income from student fees to be distributed as scholarships on a basis of scholastic achievement demonstrated after the student has spent some time in school. By doing that, last year the school was able to grant eight full tuition

scholarships and about ten half tuition scholarships. This year we have awarded seven full tuition scholarships and thirteen half tuition scholarships.

The university, in doing that, has been going on faith because in this depression it has had to accept from students whatever the student could pay. It has had to spread his payments over the year, and many of the students have gone away from school at the end of the year owing the university a considerable sum of money which it still hopes to be able to collect.

Our difficulty is that every year we have been setting up from a large number of applicants a list of sixty students whom, after very careful selection, we would be willing to admit to our freshman class. As a matter of fact, about thirty or thirty-five of that number each year have had to retire. In some cases, after having put down a good faith deposit of $25 or $50, they would finally have to retire because of financial need. We would then admit students from the waiting list, until we felt we were getting into very shallow water, and then we would stop.

Our experience with the achievement of these students has been that practically all of our failures and conditions come from that second group admitted from the waiting list. The real effect of the depression on us has been that it has kept out the more acceptable students.

So this year we have faced that problem in this way: We have shut our eyes to numbers. We have lost about fifty students in all as compared with last year, but half of that loss has been deliberate in that we have cut off at one swoop twenty students whose achievement was not satisfactory. Although we are impressed with the fact that the percentage of Negro physicians is not what it should be, and we probably need a great many more Negro physicians, we feel that it is of much greater importance to produce a smaller number of better qualified physicians than a large number of poorly qualified physicians. That seems to be our problem.

The distribution of those physicians is a matter over which we have relatively no control. We try to use our missionary persuasion to encourage students to go out to places where they are needed most, yet we realize that the Negro physician is subject to the very same attractions and distractions to which other physicians are subjected. So far as the matter of distribution is concerned, it probably is not something that physicians themselves can correct as a body or a group. Something will have to happen in those places where physicians are needed that will attract physicians to those places. That is what happened to the pioneers. Pioneers in all fields have gone to places to which they have been attracted. They have been attracted by the love of liberty; they have been attracted, perhaps, by the lure of wealth; they have been attracted by those things which they feel are the things for which they would sacrifice their lives. And that is going to be true of the Negro physician.

With reference to hospitals, we have a list of hospitals approved for internship. Again, I would like to say that, with us, it is probably not so much a greater number of internships which we need, but an improvement in quality of those internships that do exist. We should, perhaps, define what is meant by adequacy when we consider those internships, because in some of these hospitals the internships are certainly not adequate in accordance with modern accepted standards. As a matter of fact, there are only three hospitals for Negro physicians that I know of in which there is a library of any kind.

DR. ALPHONSE M. SCHWITALLA (St. Louis University): May I offer Dr. Mullowney just one word of very small comfort regarding two hospitals "that have not appointed interns." I think he was mistaken about St. Mary's Infirmary. Four interns were appointed in 1932. In the summer of 1933 we could not get any interns, although I wrote to Dr. Mullowney and to Dr. Adams, and as a result, four interns were appointed as second-year interns at a corresponding advance in salary. Since I am chairman of the Board, I feel very badly about that salary. If you can supply us four or five interns for next year, we shall by all means take them.

DR. TORALD SOLLMANN (Western Reserve University): Perhaps the reason there was no reply from the Cleveland General Hospital is that there is no hospital by that name in Cleveland. The Cleveland City Hospital has had a colored intern for the last three or four years.

DR. J. N. BAKER (State Board of Health, Montgomery, Alabama): I have enjoyed immensely both the interesting paper of Dr. Mullowney and the statistics presented by him. However, I cannot agree with the conclusion which he himself feels constrained to draw from the premise laid down. To my mind, they are both faulty and misleading.

Were not Alabama so case hardened as a result of the unsavoury publicity given her through "Stars Fell on Alabama" and the Scottsboro episode, she might be inclined to become sensitive, in that she was omitted from the essayist's Negro statistics and replaced by Illinois and Pennsylvania. You know, 37 per cent of Alabama's population is Negro.

Practically all the farming activities of the rural South are conducted on the tenant and the landlord basis. As a result, thousands of acres are in the hands of one landlord, and he will have a number of tenants. So far as medical practice is concerned over those various large farms, it is in the hands and under the control of the owner, and he himself nearly always contracts to have a physician of his own choosing look after the tenants on a contract basis. This physician is paid annually at the end of the harvesting season in the fall. Consequently, so far as the effort to get the Negro physician into the rural section of the South is concerned, I think under the existing economic setup you would have a most difficult problem and the result would be one more added to the relief rolls. Therefore, the only place for the Negro physician is in the larger cities and towns, where he is dependent on a Negro population which will pay him as an individual.

Therefore, as a member of the National Board of Medical Examiners, I seriously question whether this suggestion of the essayist as to a possible solution for this vexing question would prove workable. I will grant that in those states which require the internship of the Negro physician it does serve as a hardship.

The second point with which I should take issue with the essayist is in regard to the conclusions drawn regarding the low mortality in the State of Mississippi. We all know that when you transplant the Negro from the agricultural regions and thrust him into the cities his housing problems are immediately and tremendously complicated. His environmental conditions are at once changed and usually for the worse. The death rate from tuberculosis is between three and four times as high among the Negro race throughout the South as it is among the white population. Certainly, that is true of Tennessee, of Alabama and of Mississippi.

Mississippi's deaths are recorded very well because they have a check on the

undertaker, just as we have in Alabama. We frequently never know about the death of a Negro until the body falls into the hands of the undertaker. Then we get the information. Consequently, the first information received as to any disease frequently comes from the death certificate which must be filled in before interment can be had.

In conclusion, I should like to add that the organized medical profession in Alabama entertains the most sympathetic relations with the Negro physicians in our State, and that this is particularly true of every member of the health department's staff.

DR. JOHN J. MULLOWNEY (Meharry Medical College, Nashville, Tenn.): I did not draw any conclusion. I ask to put it in the form of a question. I still do it. It is a question. But if "the fewer the doctors the lower the death rate" is right, then I say we ought to get rid of about 90 per cent of our medical schools and live as they do in Mississippi, because Mississippi certainly has a low death rate, and if I were going to bring up children again I think I would move to rural Mississippi!

The Teaching of Pathology

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How many of us, looking back on our student days, are able to recall with pleasure the lectures in pathology to which we were subjected? So many of us still remember the bald, arid descriptions of changes brought about without rhyme or reason which we had to learn almost by heart, and our dozing classmates, waiting to be released. Perhaps, I was unfortunate; but contact with medical men in various parts of the world has shown me that mine was not an unusual experience. It is easy enough to blame the unfortunate lecturer, and to label him a dry unimaginative individual, but is this the whole truth?

On the other hand, I was more fortunate than most of my fellows in that, having had some additional years of training in advanced physiology and biochemistry, I found myself, as I grew older, turning back more and more to these subjects as I puzzled over the problems of pathology and, later, of clinical medicine. In fact, I gradually discovered for myself, as others have done before and since, that pathology is alive, a living process in living men and women, altering their behavior and structure and producing symptoms and signs. Thus, when later I came under Osler's influence in England was I better able to appreciate his maxim, "As is our pathology, so is our practice."

Just as physiology deals with the reactions of the living organism to its normal environment, so pathology deals with its reactions (and be it added, its normal reactions) to its abnormal environment. Thus, the two are closely linked. In essence, there is no real difference between physiology and pathology. Hence a deep knowledge of the former is part and parcel of an understanding of the latter. Pathology must further include the study of the nature of the abnormal environment, the changes produced by its direct action, and the alterations in behavior and structure of the tissues and organs in the attempt of the organism to overcome its difficulties and compensate for these changes. It is obvious that the study of pathology is really a very wide one, extending from the purely physical into the mental, social and even the "spiritual" environments and their effects.

From this it is obvious that the teacher of pathology, even in its narrower sense, must be a man thoroughly grounded in physiology and biochemistry, since he must be familiar with the reactions of the organism to

its normal environment before he can hope to understand and teach the reactions to an abnormal environment. On the other hand, he must also be familiar with the alterations in behavior of the organism under its abnormal conditions; in other words, he must have had some experience in clinical medicine.

Yet what do we find? In the vast majority of medical schools the professor of pathology is the hospital pathologist, a man who, too often, is no more than a morbid anatomist, whose duties tie him to the autopsy table and the microscope, and the writing of biopsy and autopsy reports, a man who seldom has had any training in physiology and biochemistry, and rarely sees, much less examines, the patient in the ward or in the out patient department. Therefore, instead of being able to carry the student across that wide gap between physiology and anatomy, on the one hand, and clinical medicine on the other, we find that he drops the student in a ditch somewhere beyond halfway. The result is that the student, though he has passed his pathology examination, so often finds himself unable to understand the outward manifestations of altered behavior, or the pathological physiology, of the patient when he enters the ward.

Having had twenty-five years of experience as student or teacher or both in four different English speaking countries (at the Universities of Oxford, Dublin, London, Melbourne and the Medical College of Virginia) I was called on to make some comparisons between teaching methods in various schools, with deductions therefrom, at a conference of Southern pathologists held lately at Duke University for the purposes of discussing, inter alia, the teaching of pathology in Southern medical schools. Such a comparison may be of value if it leads us to question some of our settled opinions, or shake us out of that lethargy into which those of us are inclined to drift who have had no experience outside their own institution.

First, however, let us deal with conditions in our Southern schools. The information presented is a summary of the protocols sent me by the various schools represented at the conference.

I. The Relation of Pathological Teaching to Other Subjects.

In the fourteen Southern four-year schools studied, I found the following: Anatomy and biochemistry are taught in the first year in all schools; physiology in the first year in 12, of which in seven it extended into the second year; nine wholly in the second year; bacteriology in the second year in all but four; pathology in the second year in all, but in five it extends into the third and even into the fourth year. Thus in nine schools physiology and pathology are taught concurrently. This presents

the difficulty most of us have to contend with, that we are trying to teach the abnormal to students who have not yet learned the normal. Hence, arises our first important question, that is, the advisability of deferring the teaching of pathology until after physiology and anatomy have been wholly or partially completed.

It is convenient to mention here, rather than later on, that in Great Britain and in Australia the study of medicine extends over six years. This, however, includes chemistry, physics, biology, botany, which, it is believed, can be taught more effectively at a university or professional school than in premedical college. Two whole years are spent on anatomy, physiology and biochemistry, and it is not until the fourth year that pathology is taken. Thus the abnormal is not touched until the normal body has been studied thoroughly. Thereafter the British and American systems are more closely alike.

II. Teaching Hours.

The total number of hours given to pathology teaching in the fourteen Southern four-year schools varies from 240 to 440 hours (average 330 hours). This includes lectures (formal and quiz-lectures), which take up from 55 to 120 hours (average 75 hours). The remaining time is used for laboratory work (apparently excluding autopsies) and this averages 255 hours, i.e., the average per week, allowing thirty weeks for the academic year, is, lectures 2½ hours, laboratory 8½ hours, total 11 hours. This raises the second question. Are we giving too much lecture and laboratory work—too much telling and being told—instead of requiring the student to work out problems and actually do things for himself?

As regards laboratory work, nearly all schools use loan collections of microscopic slides, varying from 150 to 400 slides. Usually, this is supplemented by gross specimens illustrating the lesions studied. Three schools (Johns Hopkins, Duke and the University of Maryland) apparently prefer to divide their students into small groups under separate instructors, with study of whole cases, or the whole disease, rather than the isolated lesion.

III. Autopsies.

Only two schools stated the average number of autopsies per year. These figures were 1,357 and 130. In all but one school the students attend in small groups of from eight to fifteen, which means that each individual sees very few cases. The University of Virginia appears to be the only school in which the whole class attends. In all, autopsy reports are made by the group, except in the Medical College of Virginia, where each student has to make a full protocol of a case, together with his own

microscopic preparations. Only six schools report the possession and use of a pathology museum for demonstration purposes, and only one school the demonstration of experimental pathology, as for example, the experimental production of nephritis in animals. One school has dealt with the difficulty created by students transferring from two year schools, stating, what we all have found, that many of these men have passed the pathology examinations in these schools without ever having seen an autopsy! This school makes all such "transfers" attend and prepare protocols from at least ten autopsies.

IV. Pathology for Third and Fourth Year Men.

All schools make use of the clinico-pathologic conference, nearly all for both third and fourth year men, but two for fourth year men only; four schools teach pathology into the third year and one into the fourth year, though the kind of teaching is not stated. One school reports an elective course of sixteen hours advanced pathology for fifteen fourth year students. Seven schools have weekly demonstrations of surgical pathology, together with the case histories, for third and fourth year students.

V. Quizzes and Examinations:

Information about the methods of conducting examinations was rather scanty. Ten schools use the quiz system throughout the course, but scarcely any give any information about the final examination. At Duke University, however, and apparently at Johns Hopkins, the student is graduated according to the opinion of his teachers throughout the year without formal examinations.

Some Comparisons with British and Australian Medical Schools.

It might, perhaps, now be of interest to compare the fourteen Southern four-year schools dealt with in this report with the figures taken from (a) forty-seven American schools, (b) the recommendations of the Committee of the Association of American Medical Colleges (1923 report), and (c) certain British and Australian schools:

	Lectures hours	Laboratory hours	Total hours
14 Southern schools	75	255	330
47 American schools	126	250	376
Committee of Association American Med. Colleges, 1923 recommendations	?	?	337-572
Australian and British schools e.g.			
Melbourne University	70	120	190
Edinburgh University	64	128	192

In the British schools, however, pathological instruction goes on to the end of the student's medical course. Invariably he sees much more

autopsy work than do most of our students, thus compensating for the shorter hours of more formal instruction. For example, at University College Hospital, London, after a course in junior pathology, the student in his next two years attends between 500 and 600 autopsies, assisting at many of these himself, while over the same period senior interns arrange museum demonstrations to illustrate ward and outpatient work, so that he comes straight from the patient to study similar lesions in the museum and under the microscope. Thus science and its application advance hand in hand. At the University of Melbourne, the student sees from 150 to 250 autopsies spread over his three senior years. At Edinburgh we find much the same, but there an attempt has been made, apparently with success, to interdigitate instruction in bacteriology, elementary medicine, surgery and therapeutics with pathology. The teachers in these subjects meet at intervals and arrange how they will work with one another as regards the scope covered. In this way considerable overlapping is avoided and an attempt is made to present disease pictures from different points of view, pathologic, bacteriologic, clinical and therapeutic. In both the Universities of Sydney and New Zealand the same method is adopted, but I am informed that there is not unanimity of opinion as to its results in actual practice.

In addition to these differences we also find: (1) The British system has no clinico-pathologic conference. In this, I think, they lose very considerably. My two years' experience of these conferences have impressed me tremendously with their very great value to student and teacher, and it is my opinion that the British schools would be well advised to adopt the conference system.

(2) Autopsies: The British hospitals, owing to their different method of obtaining autopsies, are enabled to present considerably more autopsy material than most of our schools can. Thus, patients are admitted to many British hospitals only on condition that autopsies can be made if required, should the patient die. A public notice (not always too public!) to this effect is put up in the vestibule of the hospital. Furthermore, bodies are never embalmed, thus eliminating a big source of trouble with undertakers. In a large hospital so many autopsies are held that the pathologists are able to choose their cases and to make these examinations at a fixed time nearly every day throughout the year. That period is always kept free of lectures or other teaching. All of the fourth, fifth and sixth year students attend, and must obtain from 50 to 75 per cent of all attendances. The result is that before they graduate all students will see from 200 to 500 autopsies. These are conducted in a large amphitheater capable of seating from 150 to 200 or more students and so con-

structed that a good view is obtained. Specimens are handed around on trays and it is usual for a full two hours or more to be spent discussing the whole case from its clinical and pathological aspects, thus to some extent compensating for the lack of clinical-pathological conferences.

(3) The British schools appear to place much more emphasis on pathologic physiology, that most important aspect of pathology which cannot be seen in the laboratory. A course in pathology would include such subjects as, for instance, cyanosis, pain, dyspnea, etc. The pathologist commonly sees patients in the wards along with the clinical teachers. He is more than the hospital pathologist in the narrower sense. Pathologic physiology thus forms a larger part of British than of American teaching, though, of course, morbid anatomy is by no means neglected.

(4) The quiz system is not in vogue in the British schools. They work on the theory that the best stimuli to good work are, intrinsic interest, the challenge of the problem, and the clinical application of knowledge, and that the fear of examinations is a psychologically unsound and ineffective stimulus to the best work. Thus, we often find that the student with the quiz hanging over his head will concentrate entirely on that subject and neglect all others until that quiz has been dealt with. He thus gets into the habit of working in fits and starts, rather than the habit of steady work.

(5) There is no group study of whole cases as we have at Johns Hopkins and at Duke, except to a limited extent at the London Hospital, at Edinburgh, and at Queen's University, Belfast. This is undoubtedly the ideal system, but it requires a larger teaching staff and more room than most medical schools can afford.

(6) Some British schools require their students to read reports on, perhaps, an autopsy or a more general subject (for instance, edema or jaundice), work which requires the student to search the literature. This is regarded as excellent training in expression, clear thinking, analysis, synthesis and correlation, and the art of correctly using a library.

Our Problem.

It is well, sometimes, to have a stock taking and to ask ourselves just what we, as teachers of pathology, are trying to do. We will undoubtedly agree that we are not trying to turn our undergraduates into specialists or pathologists, but to train "the basic doctor," i.e., the general practitioner, the man in whose hands are the happiness, health and, let us hope, implicit trust of living men and women. Obviously, such a man must be one who has more than a sound knowledge of medicine and surgery. He must have a mind trained to deal intelligently with other than the medical problems of life. He must have common sense, and be, in the best sense, a man

of the world, who knows men and women, their sorrows and joys, and their actions and reactions to their fellow men. Here, indeed, is our chief and greatest problem. Can we train men to think? Can we give them common sense? Perhaps not, but the good teacher can do something to bring out latent possibilities, to open new doors and windows to the imagination, and to create an eagerness to know the whys and wherefores of life.

In my experience, the chief obstacle to sound learning in professional schools is sloppy thinking. Too often do we find the second year student already adopting the hedging attitude of the average practitioner. Therefore, I regard it as essential that the student in his earlier stages spend years of training and drilling in two or more of the exact sciences—mathematics, Latin or Greek prose, physics, chemistry. Thus only can be formed the intellectual attitude and habit so invaluable in later life. The training will be of more value than the actual knowledge of the science gained, and if, in addition, the premedical studies have included a foreign language and history studied thoroughly, the student will be helped to a broader outlook on life's meaning.

Knowledge of human nature can, of course, be obtained only by human contacts in games and other social occupations, helped and interpreted by good reading. All medical schools should have an athletic club, where all students are encouraged to play games, but not for the production of champions. (We are surfeited with champions these days.) Here our student will have exercise, friendships, differences and a chance to study the gentleman and the pseudo-gentleman. "The hermit student may become learned, but he will never make a general practitioner."

We have a still further aim. Medical service is more and more becoming the duty of the community through its public health and preventive medicine activities. Hence, one of the primary objects of medical training is to equip the student with a sound knowledge of the life history of disease. This means that the study of pathology assumes an even greater importance than ever before. For these reasons I view with apprehension the continued encroachment of clinical teaching of the domain of preclinical training. Given a sound foundation in his undergraduate days, the physician can continue to grow with experience and life, but without this solid foundation, all his technical skill will avail him little for his future growth.

The pathologist, then, as I see him, is no longer a man who works in a small laboratory by himself, merely the servant of the clinician, but a man of the broadest outlook and training, called on to play the major part in shaping the outlook of his students (and thus, in the course of time, of

the profession and the public), to initiate and supervise research, to co-ordinate and plan teamwork for his institute and hospital, to carry on the routine work of his laboratory, and to sit, only too often, on innumerable committees.

Some Practical Conclusions.

As the result of my experiences here and abroad I have come to the definite conclusion that our usual methods of teaching pathology must be overhauled. Here I would like to acknowledge my debt to that excellent little book on medical education, by Dr. William B. Reid of Boston, which has served to bring into battle array many of my own vague feelings and half-formed plans, and from which I have borrowed freely, applying his teaching to my own subject.

First, let us deal with the old question of lectures. It is true that education is more than a matter of "telling and being told." Nevertheless, lectures have a certain definite value. It is known that the best method of learning a subject is to make use of the principle of "multiple avenues," i.e. by combining reading, lectures, observation, touch, etc. Lectures form merely one avenue, but in the hands of a good teacher, they often give a better mind picture than textbooks, especially when accompanied by drawings on the blackboard showing step by step the growth of the process described. Again, the lecturer can often put his subject in a picturesque way, using homely similes and illustrations that he would hesitate to put into a textbook. One of the most important things, however, is that the student make notes. The mere fact of having to write down what he hears, even if he discards his notes immediately afterward, is itself an excellent method of fixing the subject in his mind, and in addition, is a training in the valuable art of note-taking—and, incidentally of writing examination papers. "Writing maketh an exact man," said Bacon. Lastly, it is essential to raise the spirit of inquiry and interest right from the beginning of the lecture. One method which I find useful is to begin with the story of a patient I once saw who had a curious . . . etc., etc. Immediately the class is all ears. All are wondering why this lump or sore or swelling appeared. The interest is held. And so the clinical and practical aspect, appealing to the student's life-work of the future, are coordinated with the purely scientific aspect of the subject under discussion.

While the memory is still keen, and immediately following the lecture, a demonstration of museum and fresh specimens illustrating the subject under discussion is held. Perhaps from twenty to thirty specimens are shown, and the notable changes pointed out. Microscopic sections, often

taken from these same specimens, follow, accompanied by drawings. Thus, the use of the avenues of sight and touch follows what has been heard.

However, this method of teaching emphasizes too much the isolated lesion. Its effect is only too often seen in our daily jargon—"the heart case," "the prostate man," etc. We too often forget the individual who owns that heart or prostate. Hence, the value of whole case studies. With my small staff it is impossible to employ the group teaching system that prevails at some other medical schools. I therefore introduced what I call my "jury" system. Each jury of from six to ten "good men and true" spends some hours "sitting" on a case. Each jury has been provided with all the gross and microscopic specimens, and an outline of the clinical history. They are expected, first, to make an accurate description of what they see (training in observation and collection of evidence): second, to recognize these changes; third, to analyze and correlate these changes with one another and with symptoms and signs; and, finally, to state why, in their opinion, this patient died. So structure, altered function of diseased organs, vicarious function of healthy organs, failures and compensations, are coordinated and correlated. The deep interest created is well shown in the arguments (sometimes heated), the delving into textbooks and library, and the close use of microscope and forceps. Thus, by facing and solving many and varied problems, the effectiveness of the student's thinking is increased in the very best way: openmindedness, caution in expression, the differentiation between theory and fact, the practical application of facts gleaned from lecture and textbook, and training in the use of library and textbook are encouraged. The textbook in fact is now looked on as a source of knowledge in difficulties rather than as something to be read and learned as a task.

Space forbids further discussion of the best use of the pathological museum, of the library, of the value of essay writing, of the immense stimulus of the teacher who is also a research worker, of the value of such a teacher in creating that curiosity which makes his students ask questions as well as answer them, and of the grave objections to the soul destroying periodical quiz system. I will do no more than state a few generalizations:

(a) Education is not a matter of "telling and being told," but an active and constructive process; i.e., there must be self-activity on the part of the student. It is the student who is doing the learning. The teacher aids by guiding and stimulating. "To do is to learn." Passive learning (lectures, etc.) is too often just spoon feeding.

(b) Active learning includes teaching the student, first to observe accurately and fully, second, to correlate observed facts, and third, to apply this knowledge to the elucidation of problems.

(c) Allow a student to work out his problems, make his mistakes and correct these mistakes later. This improves the quality of the thinking, which is more important than the correctness of the answer, and a truer measure of educative growth. Our mistakes can be our most valuable assets, if we only have sense enough to learn from and remember them.

In conclusion, I would like to present, for the purpose of stimulating discussion at some future date, the following problems:

1. The advisability of placing the teaching of pathology in the hands of men of broad experience in physiology and clinical medicine and surgery, as well as pathology, rather than leaving the subject to the pure morbid microscopist, as is so often done in our schools.

2. The advisability of cutting down formal lecture and laboratory hours, thus leaving more time for active learning. Of course, here one must remember that the value of formal lectures depends very considerably on the personality of the teacher, his ability to interest, to stimulate, to illustrate and to quote from clinical experience.

3. Can the number of autopsies be increased in our hospitals? Could the British system, described above, be introduced? Would this involve legislative action by the state or municipality? Could the hospitals do their own embalming? The advisability of small groups rather than large groups at autopsies.

4. The advisability of completing the study of physiology and anatomy before commencing the study of pathology.

5. The advisability of retaining the quiz system.

6. The advisability of extending the study of pathology into the third and fourth years, and correlating it with clinical work.

Program for Forty-sixth Annual Meeting of the Association of American Medical Colleges to be Held in Toronto, Canada, October 28-30, 1935

Monday, October 28

Aims and Trends in Teaching of Biology
PROFESSOR EDWARD C. SCHNEIDER, Wesleyan University.

Undergraduate Chemistry as Relating to Medical Education
PROFESSOR HARRY N. HOLMES, Oberlin College.

Physics and the Premedical Student
PROFESSOR K. K. SMITH, Northwestern University.

Preparation for the Study of Anatomy in the Medical School
DR. J. PARSONS SCHAEFFER, Jefferson Medical College.

Physiology and Premedical Training
DR. BRENTON R. LUTZ, Boston University School of Medicine.

The Physical Sciences in the Training of the Physician
DR. R. K. CANNAN, New York University College of Medicine.

TORONTO PROGRAM

Tuesday, October 29

The Six Year Medical Course of the University of Toronto
DR. J. G. FITZGERALD, Dean, Faculty of Medicine, University of Toronto.

Undergraduate Instruction

Medicine
DR. DUNCAN GRAHAM, Professor of Medicine.

Pediatrics
DR. ALAN BROWN, Associate Professor in charge of Pediatrics.

Surgery
DR. W. E. GALLIE, Professor of Surgery.

Hygiene and Preventive Medicine
DR. J. G. FITZGERALD, Professor of Hygiene and Preventive Medicine.

Psychology and Psychiatry
PROFESSOR E. A. BOTT, Professor of Psychology and DR. C. B. FARRAR, Professor of Psychiatry.

Wednesday, October 30

Teaching of Therapeutics
DR. ARTHUR C. DEGRAFF, New York University College of Medicine.

Teaching of Pharmacology
From the Standpoint of the Examiner
DR. WM. DEB. MACNIDER, National Board of Medical Examiners

From the Standpoint of the Clinician

Dr. Jos. M. Hayman, Jr., Western Reserve University School of Medicine.

From the Standpoint of the Pharmacologist

Dr. C. W. Edmunds, University of Michigan School of Medicine.

The Internship as a Problem in Medical Education: How the Problem is Being Met in New York

Dr. J. A. Curran, Executive Secretary, New York Committee on the Study of Hospital Internships and Residencies.

Monday P. M. 1:00—Lunch in Hygiene Building.

2:00—Inspection of University Buildings:
School of Hygiene and Connaught Laboratories (University Section)
Medical Building.
Anatomy Building.
Toronto General Hospital.
Hospital for Sick Children.
Psychiatric Hospital.

7:30—Dinner at Royal York Hotel,
Speakers: Hon. Dr. H. A. Bruce, Lieutenant-Governor of the Province.
Sir Wm. Mulock, Chancellor of the University.
Hon. H. J. Cody, President of the University.
Dr. Ross V. Patterson, President Association of American Medical Colleges.

Tuesday P. M. 1:00—Lunch—to be arranged.

2:00—Sightseeing: Royal Ontario Museum,
Art Gallery.
University Farm (Farm Section of Connaught Laboratories)
Motor Tours—a. Residential districts,
b. Country districts.
Tea.

7:00—Dinner at Royal York Hotel.
Executive Session.

JOURNAL
OF THE
Association of American Medical Colleges

Volume 10 JULY, 1935 Number 4

Medical Curriculum Conference of Great Britain

In July, 1932, the Board of the Faculty of Medicine of the University of London passed a resolution "That the Universities of Oxford and Cambridge and the Royal College of Physicians of London and the Royal College of Surgeons of England be invited to appoint representatives to confer with the University of London to consider the defects of the medical curriculum and to make suggestions for reform." As a result of these recommendations, representatives of the five bodies were appointed. Later, other groups were invited to join in the study until the Conference consisted of eighteen representatives. An Executive Committee, consisting of ten members, conducted the inquiry. The report of this Conference is most interesting and informative. Comment will be reserved until a thorough study of the report has been made. At this time only the most significant criticisms, discussions and recommendations can be presented. These are the following:

The curriculum should be designed to give the student of average ability such knowledge and such education as will enable him to approach the problems of practice with some degree of confidence and with a legitimate hope that his scientific outlook on health and disease will enable him to learn from subsequent observation and experience. In the long run a scientific outlook, if once acquired, will prove of more lasting value than a store of knowledge. It is, however, impossible to inculcate general scientific principles without the introduction of much concrete knowledge. The multiplicity of special courses of instruction, followed by examinations, tend to divide a prolonged period of study into a number of more or less water-tight compartments. This very real defect can be overcome by reducing the number of examinations and by making the transition from one course of instruction to the next as little abrupt as possible. Emphasis should be laid on the preventive aspects of medicine and on the principles of personal and communal hygiene which govern the maintenance of health and the avoidance of disease. This demand is justified, but such principles, important as they are, cannot be regarded as a separate study. They belong to physiology, to biochemistry, to pathology and to every branch of clinical medicine and surgery, and the teachers in all these subjects have a special duty to perform in stressing the part which a doctor can play in the prevention as well as the cure of ill-health.

The ideal approach to clinical study is by a university training leading to a degree in arts or science. The advantages of working for a degree in arts or science, in addition to the necessary period of study for a medical qualification, are obvious. The medical student comes into contact with men working at other subjects and preparing for other professions and listens to lectures by teachers whose concern and interest in life are the development of their own branch of knowledge. Moreover, it is good for the medical student to work in the laboratories with men who are destined for careers in science other than medicine and who are interested in science from many and different points of view. The Conference

recognizes the great advantages enjoyed by those students who are able to devote one or more additional years to the study of the natural sciences as a prelude to and in preparation for their professional training. They recognize that such men, coming as they do from courses of study and research which have not been devised exclusively for medical students, bring with them new ideas and a fresh outlook which is of great advantage to the development and progress of the science and practice of medicine. It is, however, a serious matter if intending medical students during their last two years are segregated in a small group, not only from the rest of the school, but even from other boys on the science side. There should be a common examination syllabus in chemistry, physics and biology. Medical studies proper, i.e., anatomy and physiology, should not be begun before the age of eighteen.

It is not recommended that any change be made in the present arrangement whereby the first two years of the medical curriculum should be devoted to intermediate studies, leaving three years for the clinical period. It is believed, however, that certain re-arrangements could be made by concerted action of the teachers so that the course would be more harmonious, consecutive and interesting. With this end in view, it is recommended that the work of the student during this period should be arranged by a Board of Teachers representing anatomy, physiology, chemistry, biochemistry, pharmacology and pathology. The student should spend the first four terms of the six terms of these two preclinical years in acquiring a wider knowledge of organic and physical chemistry, in mastering the elements of physiology and in practicing anatomical dissections. While it is essential that the student should become acquainted with laboratory methods of scientific research, should himself make experimental observations and should be trained to carry out accurate determinations as well as careful dissections, the relevancy of these requirements to his subsequent study of the living human body should not be allowed to escape his notice. The normal function of an organ can be described and observed in the course of physiological teaching, but it would form more permanent associations in the student's mind if variations from the normal could at the same time be demonstrated in the living human subject. Modifications in teaching anatomy and physiology along these lines would not only result in a better preparation for his later work but would make the curriculum appear less disjointed and more consecutive to the student.

During the last two terms of the intermediate period the gap between the intermediate and clinical studies should be bridged by examples of the applications of physiology and anatomy to clinical medicine and surgery and by an introductory course illustrating the principles of general pathology, immunology and bacteriology. With this object it is desirable that a member of the staff of the departments of anatomy, physiology and pathology should be afforded free access to the clinical material of the hospital—or, alternatively, that a member of the staff of the hospital should be attached to each of these departments. At this stage the student should begin to practice the use of the stethoscope, ophthalmoscope, and otoscope and should gain experience of the relation of "physical signs" to the normal structure and functions of the organs of the body. Time should also be found for a short course of elementary lectures by a teacher of psychological medicine.

While dissection is valuable as a training in technique and a discipline, it can with advantage be supplemented by the use of models, by radiography and by

other methods. It is also believed that the teacher of anatomy could save the student's time if he had the opportunity of demonstrating the anatomy of the abdomen and thorax in the postmortem room. In the past too much time has been spent and too great a stress has been laid on the memorization of structural detail for examination purposes. The student's acquaintance with the details of each part immediately after its dissection should be established orally by his teachers before he is allowed to proceed to the next, but the retention in his memory of all such minutiae should not be made the criterion of his fitness to pass on to hospital work. If this plan is adopted, the preclinical examination in this subject, closely associated as it should be with that in physiology, would be a test not so much of memory but of the student's grasp of the constitution of the human body as a whole and of the structure and function of the essential systems. The student should be encouraged to make a careful study of and to make drawings of histological preparations, and he should be taught to correlate the minute structure with the function of each organ. The student should have a practical knowledge of the more important methods by which material is prepared for microscopical examination, but there is a tendency to spend too much time in the practice of technical details. The teaching of morbid histology would be made somewhat easier if during the teaching of normal histology the attention of the student were drawn from time to time to specimens illustrating the changes resulting from the reaction of tissues to chemical and physical influences.

Physiology which, for teaching purposes, includes experimental physiology, biochemistry, biophysics, applied physiology and the more academic parts of pharmacology, should occupy at least five terms, but should not be begun until the second term of the preclinical course. The whole should be under the general direction of one administrative head. Instruction in biochemistry should also be so framed as to anticipate the subsequent needs of pathological chemistry. The candidate's knowledge of this subject should ultimately be tested at the physiology examination, though not by such questions or exercises as involve burdensome memorization of detail. It is at this stage that cooperation with the clinical staff may prove essential. The object to be aimed at is that the head of the physiology department should have access to patients or command the services of some member of the clinical staff to give appropriate demonstrations. It should be made clear that the student at this stage is not in this way to receive instruction in medicine but in physiology. He should be shown patients, not as examples of disease, however typical, but as examples of deranged functions, such as jaundice, edema, cyanosis, breathlessness or paralysis.

Pharmacology is intimately connected with experimental physiology and much of the practical pharmacology course might be carried out in a department of physiology. A knowledge of the physiological action of drugs is, however, of primary importance to the student and the Conference believes that a short course of lectures and practical work on this subject is essential. There should not be a separate examination in pharmacology. Knowledge of this subject should be tested either by the inclusion of pharmacological questions in the physiology paper and in the practical examination or by a viva-voce examination. A knowledge of doses should not be required from a student before he begins his clinical work. In the preclinical teaching of pharmacology the therapeutic applications should be omitted, except in so far as they are

necessary to illustrate important principles. It is, however, desirable that the teaching of toxicology, which at present normally forms part of the course in forensic medicine, should take place during the second year of medical studies and be part of the course in pharmacology.

To avoid any abrupt transition from the normal to the abnormal while still studying anatomy and physiology, it is desirable to introduce the student during the last two terms of the preclinical period to the elements of general pathology, immunology and bacteriology. A short course of lectures introductory to the psychological aspects of medicine should be given toward the end of the preclinical period. Attendance at this course of lectures should be obligatory but an examination on their content should not be held at this stage. The examination at the end of the second year of the curriculum should be designed to test the student's general knowledge of the structures and functions of the human body, together with an elementary acquaintance with the principles underlying simple reactions of its tissues to physical and chemical changes in their environment. The student's knowledge of detail of a subject should be tested orally by his teachers before passing to a new part of the work. Success in the preclinical examination should not depend on a mere feat of memory but rather on such grasp of the structure and function of the body as is necessary to equip the student for hospital work. The Board of Examiners should represent anatomy, physiology, pathology and pharmacology, and all the examiners should meet and cooperate in setting their questions, so that papers may be reasonably balanced and not be too specialized in their requirements.

Applied physiology and anatomy should be carried through the whole of the medical course, and pathology, the study of the processes of disease, be taught throughout the whole of the clinical period, in close association with all the branches of medicine and not be regarded as a special study. Much of the time now spent in watching major operations might be more profitable expended by having the student attend the Casualty Department where throughout the day new cases of all kinds are being seen and examined for the first time.

Whilst still in the preclinical period, the student should learn from the profesor of physiology the scientific basis on which rests our knowledge of personal hygiene. It is the duty of the teacher of pathology to stress the striking advances in preventive medicine which have followed upon bacteriological and immunological research. The clinician has innumerable opportunities for instruction in preventive medicine. Obstetricians and pediatricians have the special duty in the later stages of the curriculum of emphasizing the function of the medical practitioner in relation to preventive medicine in such matters as ante-natal work, the conservative conduct of labor, the management of the puerperium and the care of the child during its early years of life. The Conference recommends a syllabus of lectures on public health and state medicine including forensic medicine. While the lectures need not be given by one teacher, there would be many advantages in placing the course under the control of one person who should, preferably, be a member of the public health service selected for his known ability to teach. Certain of the lectures might possibly be given by an experienced National Health Insurance practitioner and others by some one such as a coroner skilled in medicolegal work.

Medical psychology will have been introduced during the preclinical period. During the clinical years there should be given not less than six demonstrations at a mental hospital in order to make the

student familiar with the general aspects of advanced insanity and with the administration of institutions devoted to the care of the insane and of the mentally defective. It is highly important that the student should be made familiar with the psychological aspects of patients in the hospital, whether they are under treatment for organic disease or for functional nervous disorders, or are admitted merely for the purpose of observation and investigation. With this object a series of demonstrations should be held at least once a fortnight throughout the student's period of inpatient clerking and inpatient dressing. Much importance is also attached to the recommendation that in the final qualifying examination adequate knowledge of the psychological aspects of ill-health should be expected from the candidates and should be tested thoroughly, not only in written papers but in the clinical and oral parts of the examination.

Pathology must be taught with two objects in mind. First, to give the student such a grasp of its importance that he will come to think at the bedside instinctively in terms of pathology, and secondly, to give the student such an interest in the science of pathology that he is alert to follow its progress and ready to avail himself throughout his career of the advances in pathological theory and their application. To insure the latter, the student must attend set courses in pure pathology and spend sufficient time in laboratory work to learn something of its technique and experimental methods. To provide for the former it is essential that throughout the whole of his clinical course the student should renew his acquaintance with morbid processes in their gross and microscopical features which are associated with physical signs presented by the patients in the wards and outpatient department. The student will be helped to grasp the true importance of pathology and its bearing on his practice if he be examined in the subject, not, as is now the case, in a separate examination which he can pass and leave behind him, but as part of a final clinical and pathological test. Pathology should be taught throughout the whole of the clinical period and should be included in the final examination. It is most desirable to preserve the unity of pathology, medicine and surgery by combining these subjects in one examination, but the subjects of obstetrics, gynecology and disorders of infancy may well be taken separately. Modern condition of practice make the recently qualified practitioner a consultant in obstetrics, and for this reason there would be a real advantage if the test of a student's knowledge in this subject were made the last step in the whole curriculum.

The Conference recommends that the final examinations should consist of two parts: I. Medicine, surgery and pathology. II. Gynecology, obstetrics and pediatrics; public health and state medicine, including forensic medicine. Both parts of the examination may be taken at one and the same time, or, alternatively, a candidate may enter for part I prior to entering for part II, but no candidate should be deemed to have passed part II of the examination until he has satisfied the examiners in part I. The final examination should be conducted by a board of examiners representing the various subjects of the examination, who shall meet and cooperate in setting questions so that the papers are reasonably balanced and not too specialized in their requirements. The pass list should be prepared at a meeting of the board at which all examiners are present. Such a board of examiners would secure a better all round education for the medical student by a more thorough test of his knowledge of general medicine and surgery without in any way adding to its

difficulties. More time should be allowed for the clinical and viva-voce parts of the examination than is usually the case at the present time. A medical student after passing the final examination should spend at least six months as a resident medical officer in an approved hospital before commencing private practice.

Copies of the full report may be obtained by addressing the secretary of the Conference, Mr. G. W. Rossetti, University of London, South Kensington, London, S.W. 7, England.

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Licensure Statistics in 1934

The *Journal of the American Medical Association,* in the issue of April 27, 1935, publishes the report of the Council on Medical Education and Hospitals on the licensure statistics for 1934. These data are replete with much information. As in previous years, it is not possible to ascertain how many of the examinations reported are multiples of one candidate. However, each of the medical schools listed in the report will have this information and correct the figures given for its graduates accordingly.

The sixty-seven approved medical schools in the United States are charged with 5,413 examinations, of which 214, or nearly 4 per cent, resulted in a failure to pass. Of these 67 schools, 20 did not have any failures. These 20 schools are charged with 1,219 examinations, 22.5 per cent of the total number. Therefore, the 214 failures must be charged to 47 schools, a percentage of 5.1 in 4,194 examinations. Three schools had less than 1 per cent failures; 6 had between 1 and 2 per cent; 6, between 2 and 3 per cent; 4, between 3 and 4 per cent; 4, between 4 and 5 per cent; 3, between 5 and 6 per cent. Therefore, 26 schools charged with failures had between 0.1 and 6 per cent failures. Four schools had between 6 and 10 per cent; 7 schools had between 11 and 14 per cent and 3 schools had, respectively, 15.2, 16.9 and 18.8 per cent failures. These three schools are charged with 315 examinations and 52 failures, or, an average of 16.5 per cent. Of the total number of examinations reported, including candidates from non-approved and extinct schools, foreign schools and undergraduates, there were 517 failures, or 8.4 per cent.

The 9 Canadian schools listed are charged with 114 examinations and 19 failures, or 16.9 per cent. Only 2 of these schools did not have any failures; 2 had 23.5 per cent failures; 1 had 4.3 per cent, and the remaining 3 schools had, respectively, 42.9, 50 and 60 per cent failures.

The remaining 603 examinations taken by graduates of foreign, extinct and non-approved schools and undergraduates resulted in failure in 284, or, an average of 45.1 per cent (low, 40.6 per cent; high, 54.1 per cent).

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American Students in School of Medicine of the Royal Colleges, Edinburgh

Twenty-six American students are enrolled in the 1934-1935 freshman class of the School of Medicine of the Royal Colleges, Edinburgh, Scotland. All but three of these students made from one to 35 applications for admission to American medical schools. The total number of applications made by these 26 students was 412, with only one acceptance by a student who made 16 applications. Twenty-one of the 23 students were multiple applicants. One student had failed in one of our medical schools.

Four students applied in 1932, 1933 and 1934, making, respectively, 69, 47, 39 and 31 applications (total, 186), with no acceptances. The highest number of applications made in one year by one man was 35; the lowest, 10.

Three students applied in only one year, 1933, making five applications, with no acceptances. Seven students applied in 1933 and 1934, making 122 applica-

tions (highest, 30; lowest, 5), with no acceptances. Nine students applied in 1934 only, making 99 applications (highest, 23; lowest, 4); one of these applications was accepted.

These data again stress the fact that, on the whole, not the best, nor, perhaps, even good American students essay to study medicine in foreign medical schools.

On page 9, of the Calendar of the School of Medicine of the Royal Colleges, under the caption "Admissions of Foreign Students," attention is called to the action taken by the New York State Education Department, and the National Board of Medical Examiners in 1932 with regard to American students matriculating in foreign medical schools—but here are 26 students who have disregarded this provision, which causes one to wonder how they expect to come back home to practice. The credentials of only two of these students were submitted to the Association for evaluation.

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Identification of Students

As a means to aid the teacher in identifying the members of his class more easily, the procedure adopted by a number of medical schools of pasting a small vignette photograph of the student opposite his name in the class roll commonly used for keeping a record of attendance and inscribing grades for accomplishment recommends itself highly. It is in line with the class picture of graduating classes which consists of a composite of the photographs of the members of the class and, often, of the heads of the various departments in the school. It enables every one to identify these former students and faculty members many years after their passing from the school when mental images of persons have become dim or obscured. The class roll, with its photographs of students, may also serve to identify a student who may have changed his name in later years and also one who may have done so for purposes which might be regarded as being connected with attempts at fraud. Changing the name has rapidly become a somewhat common practice. Several instances have been published in the JOURNAL within the year of students who have made a signal failure in medical school and find it impossible to rehabilitate themselves under the name borne during the fiasco. Such students seem to regard a change of name as a convenient way to begin anew or to hide what has gone before. It would seem worth while for all medical schools to consider seriously adopting the "photo" roll call.

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Charles R. Bardeen

Through the death of Dr. Charles Russell Bardeen, the Association has lost one of its most ardent supporters and an enthusiastic and cooperating worker. He served as president in 1915-1916 and was for many years a member of the Executive Council and of various committees. At the time of his death he was a member of the Committee on Educational Policies. Dr. Bardeen was one of three deans of medical schools who have served in that capacity for more than thirty years and was the first dean at Wisconsin. His many friends will mourn his loss and miss his genial friendly smile and wise counsel.

College News

Jefferson Medical College

Mr. Wilfred W. Fry, president of N. W. Ayer & Sons, Inc., was elected president of the Board of Trustees to succeed the late Mr. Alba B. Johnson.

The annual award of the Jefferson Society for Clinical Investigation, given to that individual or group of individuals belonging to the junior staff who publish the most meritorious piece of investigative work during the previous year, was conferred upon Drs. A. Cantarow and G. Ricchuti for their paper, "The Urea Clearance Test in Pregnancy."

At the Commencement exercises of Ursinus College, Collegeville, Pennsylvania, held June 10, 1935, the degree of Doctor of Laws was conferred on Dr. Ross V. Patterson, dean and Sutherland M. Prevost Professor of Therapeutics.

Practically the entire membership of the graduating class have signed notes, pledging a substantial contribution to the alumni fund upon their assuming active practice. These notes are payable annually over a period of twenty years, each note being for that amount which the individual member feels he will be able to contribute at the time the pledge falls due. The average amount thus pledged is approximately $200, and the total reaches the sum of about $30,000. The total amount of this fund is now $264.000.

One half of the interest of a trust fund of $40,000 created by Bessie L. Skellie is to be paid to the Jefferson Medical College upon the death of a sister.

The college will share half of the income of the $126,000 estate of Mrs. Jennie Shoemaker who died September 3, 1921, leaving the funds as a memorial to her husband, Dr. John V. Shoemaker, upon the demise of her brother. The will specifies that the funds are to be used in assisting poor, deserving students of the Jefferson Medical College.

The 110th annual commencement exercises were held June 7, 1935. The address was delivered by Dr. Homer P. Rainey, president of Bucknell University, Lewisburg, Pennsylvania.

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New York University College of Medicine

Opportunities for graduate work in medicine are offered in the departments of forensic medicine, medicine, opthalmology, pediatrics, radiology, and surgery. In certain of these departments, work meeting requirements listed below may lead to the degree of Doctor of Medical Science. Courses not leading to the degree are also offered.

Minimum requirements for Admission: 1. Graduation from a medical college approved by New York University. 2. Completion of an internship of at least one year in a hospital approved by New York University. 3. Approval by the department in which the graduate work is to be done.

Admission to Advanced Standing: Applicants who have completed work of graduate character in other universities, laboratories, or hospitals, and who desire credit for this toward the degree of Doctor of Medical Science at New York University should file certified statements of such work with the assistant dean of the College of Medicine.

Requirements for the Degree: (These requirements are purposely defined broadly in order to allow departmental variation best suited to the needs of the various clinical specialties and of the individual students.)

1. A period of study after the basic internship totaling not less than three years of full-time work or the equivalent in New York University or in laboratories or hospitals recognized by it, at least one year of which must be spent in New York University.

2. Such intensive graduate training in the basic medical sciences of anatomy, chemistry, physiology, pharmacology, pathology, bacteriology, and in other fields, and original work in graduate medical studies as shall be recommended by the departments concerned.

3. An active experience during the three-year period of not less than eighteen months of full-time work or the equivalent in the wards, clinics, and diagnostic laboratories of the clinical specialty in which the work for the degree is being done.

4. A satisfactory performance in written, oral, and practical examinations in the basic medical sciences as applied to the clinical specialty chosen and in the clinical, laboratory, and public health aspects of that specialty.

5. An acceptable thesis based on original work.

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University of Virginia
Department of Medicine

At a meeting of the University of Virginia Chapter of Sigma Xi held April 24, the eleventh annual award of the President and Visitors' Research Prize of $100 was given to Dr. Alfred Chanutin, professor of biochemistry, for his paper on "Experimental Renal Insufficiency Produced by Partial Nephrectomy."

For the second time the New York Academy of Medicine has awarded the Edward N. Gibbs Prize to Dr. Alfred Chanutin. The Prize has the value of $700 and must be used for studies on renal function.

On May 2nd to 4th, Dr. D. C. Smith attended the annual meeting of the American Dermatological Association at White Sulphur Springs, West Virginia. Dr. Smith was elected to the Vice-Presidency of the Association for next year.

The Graduates of the Class of 1925 presented to the University a portrait of the late Dr. John Staige Davis, professor of medicine from 1901 to 1927. The portrait is the work of Mr. Raymond Neilson, of New York, and was unveiled by Dr. Davis' grandson, John Staige Davis, IV.

Final exercises of the University were held on June 11. Fifty-four students were graduated with the Degree of Doctor of Medicine.

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University of Alabama
School of Medicine

Dr. Edward Allen Boyden, professor of anatomy in the University of Minnesota and formerly head of the department of anatomy at Alabama, addressed the faculty and students, April 15, on "Recent Observations on the Anatomy and Physiology of the Human Gall Bladder."

The course in physical diagnosis has been amplified by use of the Hillman Hospital, Birmingham, during the last eight weeks of the second semester. The class makes the trip in chartered buses to spend one full afternoon in the hospital, divided into small groups, on the wards for two hours, for a third hour in a medical clinic and for a fourth hour in gross pathology correlated with clinical cases. The physical diagnosis teaching and medical clinic is in charge of Dr. James S. McLester and his staff. The pathology is given by Dr. George S. Graham, pathologist to the Hillman Hospital and an associate on the medical faculty. For the coming year Dr. Snowden Cowman Hall has been appointed to assist in giving the introductory courses in physical diagnosis, medicine and surgery. Dr. Hall at present is a

resident in the Private Diagnostic Clinic in the Duke Hospital at Durham. He received his A.B. from the College of William and Mary and his M.D. from Harvard University in 1930, after which he served as medical intern in the Boston City Hospital under Dr. George Minot, followed by a service as first assistant resident in medicine at the Duke Hospital.

Dr. Cornelius S. Hagerty has been appointed assistant professor of bacteriology and pathology, succeeding Dr. Gene H. Kistler, who has resigned after four years service to accept a surgical Fellowship at the Lahey Clinic in Boston. After graduating from Notre Dame, Dr. Hagerty received his medical degree from Rush Medical College in 1932, served a year's internship in Cook County (Illinois) Hospital. He has since been a member of the pathological staff of the Presbyterian Hospital, Chicago, and has acted as a teaching assistant in pathology in Rush Medical College.

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Western Reserve University School of Medicine

The faculty recently unveiled a painting of the late Dr. John Elton Darby, a member of the faculty first as professor of anatomy, then of materia medica and pharmacology from 1861 to 1917, who died January 4, 1918, at the age of 82 years. The painting was given by his son, Dr. John Charles Darby of Cleveland. The ceremony was held in the faculty room of the School of Medicine. Dr. William T. Corlett, professor emeritus of dermatology, made the presentation. Dr. Darby received his A.B. and A.M. from Williams College in 1858 and his M.D. from Western Reserve in 1861.

Dr. Charles F. Thwing, president emeritus of the university, also spoke on the late Dr. J. R. Macleod, discoverer of insulin and former professor of physiology, who died recently in Scotland.

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University of Wisconsin School of Medicine

Drs. Fred E. Mohs and Harold P. Rusch, Madison, have been appointed to research fellowships under the fund recently left to the university by Miss Jennie Bowman. A special committee is investigating the possibility of expanding cancer research at the university under the $450,000 bequest, which at present yields an income of $12,000 a year.

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University of Texas School of Medicine

Dr. George E. Bethel, dean and professor of tropical medicine since 1928, died, April 17, of chronic nephritis.

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University of Michigan School of Medicine

The Sternberg Memorial Medal has been awarded to William G. Gordon. This is the annual prize given to a medical student who has the best record in preventive medicine. The Wee Kin Lim scholastic key was awarded to Robert Toru Masuhara for outstanding achievement in roentgenology. This key was established by the Michigan Alpha chapter of Alpha Lambda, the international Chinese fraternity, to be presented each year to a distinguished senior medical student.

Three former members of the faculty were memorialized recently when relatives donated plaques to the university in their honor. The Albion Walter Hewlett Memorial Plaque will be placed in the University Hospital in honor of Dr. Hewlett, who was professor of internal medicine and director of the clinical laboratories in the medical school 1908-1916. Other plaques honor the memory of Dr.

James G. Van Zwaluwenburg, who at the time of his death in 1922 was professor of roentgenology, and Dr. George Edward Frothingham, who at the time of his retirement was professor of materia medica, ophthalmic and aural surgery and clinical ophthalmology. Dr. Van Zwaluwenburg was a member of the faculty from 1908 to 1922, and Dr. Frothingham from 1867 to 1889.

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University of Georgia School of Medicine

Dr. Eliot R. Clark, Professor of Anatomy in the University of Pennsylvania School of Medicine, formerly Professor of Anatomy in the University of Georgia School of Medicine, addressed a combined meeting of the University of Georgia Science Club and the Louis Dugas Journal Club of the School of Medicine, on Monday evening, April 15 at the Partridge Inn, in Augusta, Georgia. Dr. Clark's subject was "Observations on the Vascular System," and his address was illustrated with lantern slides and motion pictures.

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Duke University School of Medicine

March 28, Dr. Alan M. Chesney, dean of The Johns Hopkins University School of Medicine, lectured to the students and staff on "Experimental Syphilis."

Marth 30, Dr. Hugh H. Trout, director and surgeon in chief of The Jefferson Hospital, Roanoke, Va., addressed the students and staff on the subject of his recent visit to the surgical clinics at Cincinnati, Chicago, Rochester, Ann Arbor, Cleveland and Detroit.

April 1 and 2, Miss Elizabeth C. Burgess, associate professor of nursing education of the Teachers College, Columbia University, visited the Duke Hospital and School of Nursing.

April 6, the second meeting of the North Carolina State Dietetic Association was held at Duke Hospital, which was featured by an address on "Diet and Health," by Dr. W. J. Dann, of the medical school faculty.

April 12, Mr. Vernon Altvater, superintendent of Duke Hospital, gave a paper entitled, "Do We Need a Central Purchasing Bureau?" at a joint meeting of the North Carolina, South Carolina and Virginia Hospital Associations.

April 13, Dr. Foster Kennedy, professor of neurology at Cornell University School of Medicine, gave the second annual lecture, under the auspices of the Beta Rho Chapter of Nu Sigma Nu, his subject being "The Relation of Neurology and Psychiatry to General Medicine."

During the month of April, Dr. Angus McBryde, assistant professor of pediatrics, exchanged with Dr. Katherine Dodd, associate professor of pediatrics at Vanderbilt University School of Medicine.

In April a new physiotherapy department was opened at the hospital, with complete equipment for hydrotherapy and a small swimming pool for under water exercises.

New x-ray therapy equipment is being installed, in which there is a 400,000 constant potential volt machine. This machine, with two 200,000 volt machines, will make the therapy department the largest in the South.

April 27, Dr. Seale Harris, of Birmingham, Ala., gave a clinic on "Diabetes."

May 6, Dr. Wm. T. Davis, professor of ophthalmology at the George Washington University School of Medicine, gave a clinic on "Refractive and Non-refractive Asthenopia."

May 6, Dr. J. P. Pratt, obstetrician and gynecologist-in-chief of the Henry Ford Hospital, Detroit, gave an operative clinic and held a formal clinic May 7. His paper was on "Recent Studies of the Human Corpus Luteum."

University of Cincinnati College of Medicine

Dr. Marion A. Blankenhorn, professor of clinical medicine, Western Reserve University School of Medicine, has been appointed to the Gordon and Helen Hughes Taylor chair of internal medicine, effective next September. He will succeed the late Dr. Roger S. Morris.

Dr. Tom Douglas Spies, senior instructor in medicine at Western Reserve University, has been appointed assistant professor of medicine at Cincinnati.

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Marquette University School of Medicine

Guest speakers during the past four months: Dr. Bowman C. Crowell, associate director of the American College of Surgeons spoke on "The Seven Wonders of Medicine," February 26. Dr. Arno B. Luckhardt, professor of physiology and pharmacology at the University of Chicago, spoke on "Academic or Unsuccessful Research," March 8. Dr. Howard A. Carter, secretary of the Council on Physical Therapy of the American Medical Association, spoke on "Physical Therapy," April 8. Dr. Rosco G. Leland, director of the Bureau of Medical Economics of the American Medical Association, spoke April 12 on "Economics in Relation to the Practice of Medicine" and explained the work of the Bureau. Dr. Andrew C. Ivy, professor of physiology and pharmacology at the Northwestern University School of Medicine, spoke on "the Hormones of the Gastro-intestinal Tract," April 29, as the guest lecturer of The Circle, the honorary student society of the Marquette University School of Medicine. Dr. Ivy was presented with a golden key and a certificate of The Circle in recognition of his original contribution in the field of hormones and digestion.

Dr. Walter L. Bierring, president of the American Medical Association, spoke on "Historical Sequence of Medical Events," May 10.

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Medical College of Virginia

Commencement exercises closing the ninety-seventh session of the Medical College of Virginia were held at the Mosque Theatre, May 28. Honorable George C. Peery, Governor of Virginia, was the speaker.

The commencement sermon was delivered by Dr. J. Blanton B !k, pastor, Grace Covenant Presbyterian Church.

The honorary degree of doctor of science was conferred on Dr. Charles R. Turner, dean, University of Pennsylvania School of Dentistry, Philadelphia. Doctor Turner is an alumnus of the Medical College of Virginia.

There were seventy-eight graduates.

Dr. F. M. Hodges and D. D. Talley, Jr., have been appointed clinical professors in radiology. Dr. Harry Walker was elected assistant Professor of Medicine, and Dr. J. C. Riggin lecturer of preventive medicine and public health.

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Stanford University

President Ray Lyman Wilbur has been elected president of the Motion Picture Research Council.

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Long Island College of Medicine

Adam M. Miller died suddenly at his home in Mountain Lakes, N. J., May 28, 1935. He had been Dean for fifteen years and professor of anatomy since 1914. During his tenure of administrative office he played a most important part in the reorganization of the college as it merged from the Medical School of the Long Island College Hospital into its present status.

He was born in Homewood, Pa., April

2, 1879. He graduated from Princeton University, A.B., 1901, M.A., 1902, and remained on as a Graduate Fellow in Biology under Edwin G. Conklin until 1903. He then joined the staff of George S. Huntington at the College of Physicians and Surgeons, Columbia University, where he continued his studies in embryology. It was there that he, in collaboration with Frederick R. Bailey, published the Text Book on Embryology. From 1903 to 1912 he was instructor in the department of histology and embryology at the College of Physicians and Surgeons, Columbia University, and from 1912 to 1914 he was assistant professor of anatomy. He came to Brooklyn in 1914 as professor of anatomy at the Long Island College Hospital.

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University of Chicago
Division of the Biological Sciences

Dr. Frank R. Lillie, Dean of the Division, was elected President of the National Academy of Sciences and Chairman of the National Research Council.

Through a grant of $168,000, appropriated by the General Education Board, the University will be able to round out and integrate resources for instruction and research in neuropsychiatry, including brain function and disfunction, by a modest beginning in clinical psychiatry.

With this grant to establish and maintain the program for the next 3 years, it is planned to start work immediately on the alterations necessary to provide the clinical facilities contemplated.

Dr. Roy R. Grinker, associate professor of neurology, will be in charge of the new Division which is to be organized within the Department of Medicine.

Floyd S. Markham and Sion W. Holley will share equally in the Howard Taylor Ricketts Prize this year. Mr. Markham's paper was on "Studies on the Submaxillary Gland Virus of the Guinea Pig;" Mr. Holley's, on "Corneal Reactions of Normal and of Tuberculous Guinea Pigs to Tuberculo-Protein and Tuberculo-Phosphatide."

This prize was established in 1913 in honor of Dr. Howard Taylor Ricketts, a former member of the Faculty, who died in Mexico in 1910, a martyr to his own research on typhus fever. Each year the winner is announced on May 3, the anniversary of Dr. Rickett's death. This year the prize amounts to $186.

The generous assistance which the Rockefeller Foundation has been giving since 1929 in the way of support for research in biology, has been pledged for three more years. A grant of $50,000 a year from July 1, 1935, has been made.

Dr. Wilfred T. Dawson, professor of pharmacology at the University of Texas Medical School in Galveston, has been appointed associate professor of pharmacology in the department of Physiological Chemistry and Pharmacology for the summer quarter. Dr. Dawson will teach the courses in pharmacology this summer.

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Harvard Medical School

Dr. Milton J. Rosenau, since 1909 Charles Wilder professor of preventive medicine and hygiene, will retire this year under the age limit rule. A portrait of Dr. Rosenau was presented to the medical school by a committee of his colleagues.

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University of Toronto
Faculty of Medicine

The following were prize winners at the end of the sixth year of the course: F. H. Côte: Faculty Gold Medal; Ellen Mickle Fellowship; Chappell Prize in Clinical Surgery; William John Hendry Schloarship in Obstetrics and Gynaecology, and Ontario Medical Association Prize in Preventive Medicine. A. L. Chute: Faculty Silver Medal; P. B. Hamilton: David Dunlap Memorial Scholar-

ship. C. E. Vaughan: Canadian Medical Institute Prize. M. R. Caverhill: Honorable Mention.

Undergraduate Prizes: I. M. Hilliard and J. E. Howes: David Dunlap Memorial Scholarships, fifth and third year, respectively. W. L. M. King: Ronald S. Saddington Medal in Pathology. J. C. Rathbun: Baptie Scholarship.

Graduate Prizes: Reeve Prize, Dr. C. E. Dolman; Lister Prize in Surgery, Dr. R. C. Laird; Perry Goldsmith Prize in Oto-Laryngology, Dr. H. H. Burnham; Starr Gold Medal, Dr. A. W. Ham; J. J. Mackenzie Fellowship in Pathology and Bacteriology, Dr. J. C. Paterson.

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University of Maryland School of Medicine

Dr. Frank C. Bressler bequeathed $1,000,000 to the school to erect and equip a research laboratory.

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Vanderbilt University School of Medicine

At a recent meeting of the Board of Trust, Dr. Hugh J. Morgan was elected professor of medicine, effective September 1, 1935, to fill the position formerly held by Dr. C. Sidney Burwell who has been elected Dean and professor of research medicine at Harvard University Medical School.

Johns Hopkins University School of Medicine

Dr. Nicholson J. Eastman, professor of gynecology and obstetrics in Peiping Union Medical College, has been appointed professor of obstetrics to succeed the late Dr. J. Whittridge Williams.

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University of Mississippi School of Medicine

Dr. B. S. Guyton, lecturer in minor surgery, has been appointed acting dean to succeed Dean Mull who resigned.

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Wayne University College of Medicine

Dr. W. H. MacCraken, for many years dean of the college, has resigned, effective July 1, 1935. He will retain his teaching position as professor of pharmacology and therapeutics.

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University of Tennessee College of Medicine

Faculty Promotions: Drs. William W. Riggs, Jerome P. Long, Jr. and James M. Brockman, to assistant professors of medicine; Dr. Matthew W. Searight, assistant professor of gynecology; Dr. Isaac G. Duncan, assistant professor of urology; Dr. Joseph I. Mitchell, assistant professor of orthopedic surgery, and Dr. Frank W. Smythe, associate professor of surgery.

General News

Capps Prize

The Institute of Medicine of Chicago has awarded the Joseph A. Capps Prize for 1934 to Dr. Lars F. Gulbrandsen, instructor in pathology, bacteriology and public health, University of Illinois College of Medicine, for a paper on "Invasion of the Body Tissues by Orally Ingested Bacteria and the Defensive Mechanism of the Gastro-Intestinal Tract."

The prize of $500, established by an anonymous donor in honor of Dr. Joseph A. Capps, is awarded annually for the most meritorious medical research by a graduate of a medical school in Chicago completed within two years after graduation.

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Salmon Memorial Medal

The Salmon Memorial Committee for Psychiatry and Mental Hygiene has donated to the American Psychiatric Association an award to be known as the "Salmon Memorial Medal," which is to be presented from time to time to the person distinguishing himself in the field of psychiatry by original contributions to that specialty or for outstanding accomplishment. The Salmon Committee was organized several years ago to perpetuate the memory of Dr. Thomas W. Salmon, a former president of the American Psychiatric Association.

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Tuberculosis Scholarships at Forlanini Institute

The Italian Fascist National Federation Against Tuberculosis has placed at the disposal of the International Union Against Tuberculosis six scholarships for foreign medical practitioners at the Carlo Forlanini Institute in Rome. The scholarships, which have a value of 3,000 lire, plus board and lodging, will preferably be awarded to young physicians already familiar with problems of tuberculosis. The period of study will be from November 15 to July 15, 1936, the academic year. Candidates from the United States must apply through the National Tuberculosis Association, 50 West Fiftieth Street, New York, before June 1.

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Jessie Horton Koessler Fellowship of the Institute of Medicine of Chicago

The Jessie Horton Koessler Fellowship of the Institute of Medicine of Chicago for the aid of research in biochemistry, physiology, bacteriology, or pathology, will be available July 1, 1935. The stipend is $500 a year with the possibility of renewal for one or two years. Only such applications will be considered as are approved by the head of a department in the fields mentioned or by the director of a research institute or laboratory in Chicago, and which stipulate that the recipient of the fellowship shall be given adequate facilities for carrying out the proposed research, concerning which full information is required in the application. Applications should be sent to Dr. H. Gideon Wells, 950 East 59th Street, the Committee.

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Postgraduate Medical Teaching in London

The British Postgraduate Medical School has been in operation since May 1, 1935, although its organization is not completed in all details. The most striking feature is the small provision made for the lecture type of teaching and the large provision for bringing students into personal contact with patients.

The department of medicine has charge of about 180 beds distributed in six large wards. The full time staff of the depart-

ment consists of a professor, a reader, four first assistants, five house physicians and an assistant medical officer who acts as resident medical officer. The first assistants are chosen for their expert knowledge in one or other of the various specialties of general medicine. Consultants act whenever their services are required.

Each senior non-resident member of the staff, with a resident house physician, has charge of thirty beds. Each senior member of the staff holds a consultation outpatient session one morning a week. House physicians are resident. They are recruited from the graduate students of the school. They are responsible for carrying out treatment and for patients' records. Opportunities are provided for them to study for higher degrees, engage in research, and so forth.

Courses of Instruction: 1. Medicine.—Instruction in clinical medicine is provided by appointments to the wards of about 15 students to 60 beds for periods of three months or more. They will act as clinical clerks. Bedside clinics or ward rounds will be held on two mornings a week, and on two mornings a week theatre clinics will be given by the professor or reader. On a fifth morning there will be a clinico-pathological conference which all students will attend. On one afternoon a demonstration of roentgenograms will be held. Postmortem examinations are held daily.

2. On three mornings a week outpatient sessions are held, consultative in character. Small numbers of students working in the wards assist at these sessions.

3. Intensive courses for practitioners, lasting two weeks. In these courses a disease or group of diseases is considered, as subjects covered might include discussion on (1) the place medicine and the doctor are taking in modern society; the doctor's responsibilities to the State and to his individual patient; (2) methods of clinical examination and the importance of history taking; the study of the patient and medical psychology; (3) the physiology of the mind; (4) infections of the upper respiratory passages; (5) chronic arthritis; (6) dyspepsia. The number of practitioners attending will be limited to 25. Courses will be held at intervals and will include medicine, surgery, pathology and obstetrics.

4. A series of lectures and demonstrations one afternoon or evening a week during the winter. A series of subjects will be covered.

5. Members of the medical profession, other than those on the full time staff of the school, will be invited to take part as teachers in the refresher courses and at the weekly lectures.

6. Courses may be arranged to be given by distinguished visitors to London, they to take charge of wards for a time and take part in the routine work of the hospital and the school.

7. Graduates who wish to carry out investigations and require clinical material can be accommodated in small numbers.

8. Graduates who wish to attend shorter periods than one month will be accepted in small numbers.

9. Visitors for short periods will always be welcomed.

Surgery.—About 180 beds are available. Staff: One professor; reader; two first assistants; four house surgeons and an emergency surgeon and liaison officer. The members of the staff all have some special experience in surgical specialties. A considerable part of the teaching will be carried out in the demonstration theatre. Certain classes will be held in the outpatient department. Some teaching will be going on every day in the year. The groups of students will be about the same as for general medicine. The patient will be the center of the student's activity.

Obstetrics and Gynecology.—About 110 beds eventually. The antenatal clinic is part of the general outpatient department. One floor of the unit is given over to "clean" cases; another, to "suspect" cases; antenatal cases are admitted for complications, such as toxemia and pyelitis. No case of puerperal infection will be admitted. Teaching will be essentially clinical with a minimum of ordinar systematic instruction. The student will be brought into intimate contact with patients. Instruction in infant hygiene will form part of the routine instruction, and to this end, a pediatrician is attached to the hospital. On one day a week, practitioners will be invited to clinical demonstrations and discussions. Research will be directed mainly to clinical ends.

The staff consists of a professor, a reader, two assistants and two house surgeons.

Pathology.—This department will cooperate closely with the various clinical departments in those activities of the school which are common to all. It will take part, although a minor one, in refresher courses. The special object of the department will be to provide facilities for advanced study in all branches of pathology. The department will be concerned with students of pathology rather than with students of medicine to whom pathology is but one of several subjects engaging attention. The department will collaborate with members of the clinical departments in combined investigations. The organization of the department provides for readerships in morbid anatomy and histology, bacteriology and pathological chemistry. Each reader will have at least one assistant. There is also a subdepartment of clinical pathology. Instruction will be personal in character. Students will work in the laboratories under direction of members of the staff, carrying out the ordinary pathological investigations for the hospital, and research students will be occupied mainly with their individual problems. Formal teaching will play little part in the scheme. Pathological conferences will be held on one or two afternoons a week when the routine work of the department will be discussed. The professor of pathology will combine with the professor of medicine in a weekly clinico-pathological conference. One weekly conference will be devoted to the postmortems of the week in which cases will be dealt with from a more pathological point of view and students will be able to enter more deeply into the bacteriology, chemical pathology and biochemistry of the material. Pathology will be regarded as a habit of mind pervading every aspect of medical inquiry.

The staff of this department consists of a professor, three readers and four assistants.

Abstracts of Current Literature

Restriction of Number of Professional Students

Most of the perplexities will clear if the problem is approached from the angle of quality. By quality in the physician I refer to expertness, character and personality. Of these there is no oversupply. If quality in these essential and coordinate elements is insisted on there will be no overcrowded medical profession for the very good reason that, while there are hosts of suitors, the number who can draw the bow of the medical Ulysses is never large. Those who can do so, those who on this threefold basis of quality are rightfully admitted to the profession of medicine, will in all likelihood be successful and contented and will receive commensurate rewards. Most important of all, in accordance with their democratic principle, the American people will be well served.

Because medicine is both a science and an art there are corresponding divisions as to expertness. Every one grants that the marvelous advances of medicine in the past quarter of a century have been due basically to scientific research. Vast fields remain for exploration by young men having the bent for research. Since there is no oversupply of research ability, the quest for it among students should be a permanent item on the agenda of every medical school.

To determine which of the candidates for the medical profession are fitted to measure up to its stern professional standards becomes a peculiar obligation to medicine and to the public.

There is the sense of vitality which marks the physician's personality. He need not be an Osler, a Welch, or the particular physician whom you would cite as a towering figure. But he should have a personality inspiring confidence and cheer. What every patient knows is that he is helped by the man as well as by the physician.

The element of personality enriched by education and culture marks the physician effective as a practitioner and also as a leader in this democracy.

If it is to be granted that expertness, high character and vital personality are essential requirments of the physician, the question arises as to who shall measure these qualifications and how.

The medical school is in a position to judge, perhaps better than commissions, whether of the public or of the profession, regarding the quality of candidates for the profession. I believe that the best medical schools are already doing this creditably well. They are making quality the basis for admission, for advancement and for graduation from the medical school.

As to admission, they are utilizing various criteria, such as grades attained by applicants in their liberal arts work, scores made in the medical aptitude test, and confidential opinions of the science professors who taught the applicants in the liberal arts college.

As to advancement and graduation, they are employing examinations of both old and new types, including the promising new devices of qualifying examinations for students at the end of two years of work and of comprehensive examinations, along with other content examinations in the senior years, as a final quality test.

All these academic procedures are of prime importance. But they are not enough. There remains the necessity to

obtain estimates of the cultural and ethical background and outlook of the applicant for admission and of the candidate for graduation. No task facing a dean and faculty calls for more care, wisdom and humility. But undertake it they must.

And now for my concluding thought. It seems to me that, if we accept the doctrine of quality first, the determination of quality among candidates for the medical profession may well be left to the medical colleges. If so, there will probably be a solution of our question as to numbers in the profession—a solution that issues from the economic conditions in which we find ourselves. Financial limitations hamper every university and medical school. With stabilized income from tax sources in institutions under public control, with stabilized income from endowments in institutions under private control, with stabilized fees in both types, the gifts that trickle in should be assigned not for more enrolment but for more research and for improvement in teaching facilities.

Each medical college should resist the temptation to take more students merely to make money. Each medical college should hail quality as its obligation and goal as never before. In this policy there should be concurrence by the Council on Medical Education and Hospitals of the American Medical Association, by the Association of American Medical Colleges, and by the Federation of State Medical Boards of the United States. —WALTERS, R., *J.A.M.A.*, March 30, 1935, p. 1051.

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Trends of Graduate Teaching

The undergraduate medical school and the changed relationships in the hospital situation will largely predetermine activities in graduate medical instruction. Pure research probably will be eliminated from undergraduate medical activities, and the function of the faculty in the undergraduate medical schools, so far as research is concerned, will be to select those students who from natural ability and aptitude exhibit qualities that will be valuable in a research program. Pure scientific medical research should be reserved for graduate time. Certain hospitals will undoubtedly devote their clinical material to a complete and integrated system of medical fellowships and resident positions in the special division of medicine. The number of such resident positions will after all be limited, for only a hospital with large bed and clinic facilities can possibly transform itself into an institution for the development of specialists. It will require anywhere from three to five years, added to the undergraduate course in medicine, for an institution to certify to the competence of an individual in a given specialty. The teaching of specialists will of necessity be confined to large cities and their large hospitals.

There follow logically from these premises three distinctive trends in graduate medical education: (1) a research fellowship in pure science, (2) a continuous and periodic reeducation of the great bulk of practitioners serving in dispensaries and clinics, and (3) the training of specialists.

In the background of any discussion of education, be it medicine or otherwise, is one fact that cannot be forgotten, and that fact can be tersely expressed in the words "education costs money." Whether the encroachments of the state into the field of medical service and medical education will fully meet or satisfy the demands that private philanthropy has taken care of is a question that only the future can answer. The problem of medical service to the community, so far as the quality of the service is concerned, is largely in the hands of medical schools and voluntary hospitals. Failure of the legislators to recog-

nize the preeminent technical ability of these custodians of medical education will invariably bring about a depreciation in the quality of medical service.

Scientific advancement in medical education, in a personal sense, will rest on the ability (1) to observe, (2) to correlate repeated clinical observations and, ultimately, (3) to generalize on these facts. If true science is the power of performance, then a means should be encouraged that will place the prospective student in contact with great clinicians. —HEYD, G.: *J.A.M.A.*, March 30, 1935, p. 1061.

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Undergraduate Teaching of Tuberculosis

I approach the question of the undergraduate teaching of tuberculosis to medical students as a part of the course in internal medicine and to a lesser degree also in surgery, rather than from the point of view of a specialty in medicine. It is in the fourth year, during the period of so-called medical clerkship, that most of this teaching material on chest diseases should be placed before the undergraduate student. Each student should certainly at least have one month, and preferably six weeks, of continuous all-day study, with a schedule including the various angles of approach. The Bellevue Hospital Service comprises 180 beds, mainly for tuberculosis, but between 15 and 20 per cent of all patients are suffering from chronic nontuberculous chest conditions. There are over 3,000 admissions each year. Many of the basic requirements that I have outlined as desirable for teaching tuberculosis to undergraduates have been provided at Bellevue. We feel that we need a little more time for each student, and that six weeks would be none too long for each fourth-year student to spend in our service. In general, the aim of our teaching is to provide first the material. This consists on the one hand of the patients specially selected because of their type of ailment, and on the other hand of the student, the material of which the physician is to be made. With this human material we provide the tools and the technic for the training of the student under expert guidance. He is also encouraged to learn to think for himself and thus to acquire wisdom rather than to accumulate knowledge.—MILLER, JAS. A.: *J. A. M. A.*, Apr. 13, 1935, p. 1337.

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Physics in Relation to Medicine

The *American Physics Teacher* (May, 1934; September, 1934), publishes two reports made by Committees on the Teaching of Physics for Pre-medical Students of the American Association of Physics Teachers in 1923 and 1934, respectively. These reports deal with the teaching of physics in its relation to medicine. They are the result of careful study by experienced teachers of physics, and contain much that is of prime interest to medical educators. Space forbids publishing these reports in their entirety, but all who can secure copies of these reports will do well to read them. They are a distinct step forward in establishing cooperative effort in the direction of understanding of the problems which are of mutual interest to all educators, especially medical educators.

Physics is specified as a required subject for admission to medical schools, but little has been said thus far as to the content of the course in its relation to medical education. These two reports deal specifically with that phase of the problem.

The following is a summary of these reports:

The committee has called attention to the greatly increased importance of physics in relation to medicine, to the realization of this by medical men, and to the desire on their part for increased cooperation of physicists in medical research, and for better preparation in physics for the study of medicine. They have made the following recommendations, present-

ing the reasons which have governed them as fully as possible without unduly extending the length of this report:

First: That successful participation of physicists in medical research can best be secured by the appointment of one or more physicists on the staff of medical institutions. The duties of such men should include cooperation in research, advice in the application of physical methods and instruments in medical practice, and systematic instruction in one or more courses open to students or any other members of the institution who may desire it.

Second: As regards education in physics preparatory to medicine, they feel that in view of the other great demands on the time of the student, the amount of physics required of the average student for entrance to the medical school should be limited to one good course of general physics in college, but they urgently recommend that this course fulfill the following conditions as essential to the accomplishment of its purpose:

a. The course should aim to instil the fundamental principles and concepts of the science as a whole, and the ability to apply them rather than to teach particular phenomena or methods, supposed to be appropriate to present medical practice. The student must be left in a position to extend his knowledge by his own efforts in accordance with the future development of his interests and the progress of medicine.

b. The course should, if possible, come in the second college year and be preceded by a year of college mathematics. This amount of preparation in mathematics is not excessive in view of the importance of physics to the medical student and the fact that physical chemistry, which requires a considerable use of mathematics, is also usually required for the medical school.

c. If a year of college mathematics cannot possibly precede the course in college physics, a good working knowledge of elementary trigonometry and logarithms should still be considered as an important prerequisite. It should, therefore, so far as practicable, be required for entrance, if the course in physics is to come in the freshman year.

d. The committee estimates that to accomplish its purpose a total of at least 500 hours of the student's time will be required for the course, including class work, laboratory work, home study, and reading, and the minimum time and credit to be assigned to it in the curriculum should be 12 semester hours.

Third: In addition to the required course in general physics an elective course should be provided, suitable for students who desire more knowledge of physics than the general course affords, but who expect to apply their knowledge to medicine or biology, rather than to engineering or physics. The additional training afforded by this course might be recognized by the medical school by accepting it from a limited number of students in lieu of some other requirement, for example, in lieu of a second year of biology. It should normally be taken in the last year of the college course, and be looked upon as an advantage accruing from a four-year preparatory course and usually out of the question in one of two years only.

Fourth: There should be provision in the medical school for one or more courses in biophysics, or physics applied to medicine, as electives, usually to be taken in the last years of the medical school course, after the student knows enough medicine to realize the importance of the subject, and has some idea of the field to which he intends to apply his knowledge, so that the course can be adapted to it.

Book News

Electrotherapy and Light Therapy

By Richard Kovacs, M.D., Clinical Professor and Director of Physical Therapy, Polyclinic Medical School and Hospital, New York City. 2d Ed. Lea & Febiger, Philadelphia. 1935. Price, $7.50.

This book reflects the rapid strides of physical therapy during the last three years, showing its many new and interesting clinical developments, the fruits of the extensive research work in this field and the cooperation of physicists, biologists and clinicians in clarifying its problems. Much of the work has been rewritten and simplified. A new chapter on the physiological effects of electricity has been added; iontophoresis is described in detail; the rôle of thermionic (vacuum) tubes in therapy is explained and illustrated; and the sections on hyperpyrexia by diathermy and on short and ultrashort wave diathermy have been added. The chapter on electrosurgery has been amplified. The section on light therapy has been extended and rewritten and new sections on proctology, electrosurgery in urology, ophthalmology and on miscellaneous conditions have been added. Eighty-six of the illustrations are new. Appended is an electrical glossary issued by the Council on Physical Therapy of the American Medical Association.

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Economic Problems of Medicine

By A. C. Christie, M.D., Professor of Clinical Radiology, Georgetown University School of Medicine. The Macmillan Company, New York City. 1935. Price, $2.

The subjects discussed are medical ethics in its relation to medical economics; economic aspects of medical education and of private practice; the physician and the hospital; the relation of the physician to medical organization and to the community; medical care under workmen's compensation laws; health insurance; industrial medicine; new methods of medical care under trial or recommended by medical organizations; health insurance as a solution to the problems of medical care; essential elements in a comprehensive plan for medical care.

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Clinical Management of Syphilis

By Alvin R. Harnes, M.D., Chief of Congenital Luetic Clinic, New York Hospital, New York City. The Macmillan Company, New York City. 1935. Price, $1.50.

In addition to therapy, emphasis is placed on certain cardinal points which are the everyday currency of syphilologic practice, such as the inadvisability of commencing treatment before a certain diagnosis of syphilis is made; the absolute necessity for routine spinal fluid examination and the practice of treating every syphilitic woman in every pregnancy regardless of serology or previous treatment.

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Principles and Practice of Urology

By Frank Hinman, M.D., Clinical Professor of Urology in the University of California Medical School. W. B. Saunders Company, Philadelphia. 1935. Price, $10.

This is a presentation of the principles of urology in a form which is of practical use to the medical student. The book covers in detail the principles of foundation and of practice, including everything necessary for the instruction of the medical student. The book is divided into two parts: Part I, The Principles of Urology; Part II, The Practice of Urology. Each part is divided into divisions

and subdivisions. Part I, Division I, The Biological Principles of Urology; Subdivision I, The Comparative Anatomy of the Urogenital Tract; Subdivision II, The Development of the Urogenital Organs in Man; Subdivision III, Normal Structure and Function. Division II, The Clinical Principles of Urology—with two Subdivisions, I. Presumptive Findings; II. Positive Findings. Part II is devoted to a discussion of urological diseases, anomalies and abnormalities. More than five hundred well made illustrations, line drawings and microphotographs support and emphasize important points.

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Textbook of Urology

By Daniel N. Eisendrath, M.D., Assistant Professor of Surgery (Genito-Urinary), Rush Medical College of the University of Chicago, and Harry C. Rolnick, M.D., Clinical Professor of Genito-Urinary Diseases, Loyola University Medical School. 3d Ed. J. B. Lippincott Company, Philadelphia. 1935.

Revised, with addition of a chapter on renal calculi covering the differential diagnosis of cholelithiasis. Worthy of special mention are the numerous fine illustrations; printing essential points in black face type; the cross references in the text and the index, which is somewhat unique. It enables one to find anything in the book. The first eleven chapters deal with embryology, anatomy, physiology, terminology, instruments, technic, radiography, laboratory methods, anesthesia and urologic study, all items of importance to the beginner in this field.

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Physical Diagnosis

By Warren P. Elmer, M. D., associate professor of clinical medicine, Washington University School of Medicine, and W. D. Rose, M. D., late associate professor of medicine, University of Arkansas. 7th Ed. C. V. Mosby Company, St. Louis. 1935. Price, $8.

Complete revision; much new matter added, especially on aortic murmurs, silicosis and diagnostic methods; sections on electrocardiography rewritten. Covers technic of physical examination, normal and abnormal physical diagnosis. To be used as a supplement to clinic and bedside diagnosis. Book is covered by a new waterproof and vermin proof binding.

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Textbook of Pharmacognosy

By George E. Trease, B. Pharm., Ph. C., Lecturer on Pharmacognosy in the University of Nottingham. William Wood and Company, Baltimore. 1935. Price, $6.

Comprehensive; well arranged; covering every requirement of pharmacognosy. Drugs of vegetable and animal origin are discussed. Many excellent illustrations.

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Methods of Treatment

By Logan Clendening, M. D., clinical professor of medicine, University of Kansas School of Medicine. 5th Ed. C. V. Mosby Company, St. Louis. 1935. Price, $10.

An outline of all methods of treatment in internal medicine, gathering together material widely scattered in medical literature which is the outstanding feature of the book. In two parts: Part I describes each procedure under the heading of drugs, diet, hydrotherapy. Part II considers application, results to be expected, etc., under heading of various diseases.

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What You Should Know About Heart Disease

By Harold E. B. Pardee, M. D., assistant professor of medicine, Cornell University Medical College. 2nd Ed. Lea & Febiger, Philadelphia. 1935. Price, $1.50.

For the layman; written in understandable language to enable him to follow his physician's directions intelligently.

The Compleat Pediatrician: Practical, Diagnostic, Therapeutic and Preventive Pediatrics for the Use of Medical Students, Internes, General Practitioners, and Pediatricians

By Wilburt C. Davison, M. A., D. Sc., M. D., Professor of Pediatrics, Duke University School of Medicine. Adaptation of the Title Page of The Compleat Angler by Izaak Walton, 1653. Duke University Press, Durham, N. C. 1934. Price, $3.75.

This book is a compilation and brief record of practical pediatric facts, combining in one volume the information usually found in several books. It is really a cross index of children's diseases and all pertaining thereto. The aim is to train students and practitioners of pediatrics to arrive logically at a diagnosis by emphasizing the fact that symptoms are clues, which may be caused by several diseases, all but one of which must be eliminated by further study of the patient's other symptoms and often by the use of laboratory methods, before the correct diagnosis can be made. The author says that of the 307 diseases to which children are heir, only 100 are important, i.e., thirty-seven, which cause 56 per cent of the deaths in children and can be prevented, and sixty-three, which cause 21 per cent of the pediatric deaths and respond to adequate therapy.

The book is divided into seven chapters. The material in each chapter is arranged alphabetically. Each subject is numbered, with a black face title, and various sizes and fonts of type, daggers, asterisks, etc., to designate the frequency of symptoms, etc. The pages are not numbered. The sections are numbered, but each section begins with an eve number. For instance, the chapter symptoms has sections 1-79; diagn and treatment, 100-900; prevention, 11 1390; fluids, 1401-1425; diets, 1501-15 drugs, 1601-1773; laboratory metho 1801-1957.

The numerous cross references aid securing a complete picture of any d ease, beginning with the outstand symptom and ending with treatment. A essential facts are given in an extrem simple manner. However, the begin in this field will not find the book to as valuable as will he who knows som thing of the subject. The practition will find it of much value as a rea reference work. It is full of informati and of a size to fit the pocket. The wo is unique. The author spent eight ye compiling it.

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Diseases of the Heart

By John Cowan, M. D., late profes of medicine, Anderson College of M cine, Glasgow; W. T. Ritchie, M. professor of medicine, Edinburgh U versity. 3d Ed. William Wood & C pany, Baltimore. 1935. Price, $9.

New material on the work of the he the regulation of the circulation, a circulatory failure, chronic myocardi failure and dropsy have been inclu in this revision. New chapters deal w the blood supply of the heart, an pectoris, myocardial infarction, the rh matic and syphilitic diseases of the he This account is based entirely on the thors' personal experience. It is p fusely illustrated, nearly all of the in dreds of illustrations being original. T extensive list of reference to the lite ture will be appreciated.